VOL. XLI No. 4 APRIL 1956

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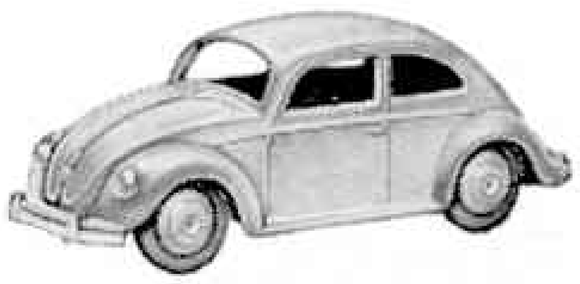

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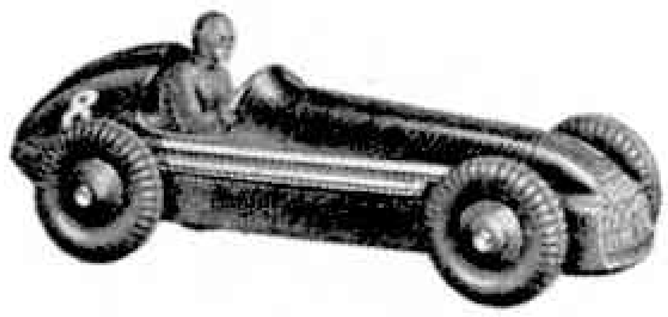

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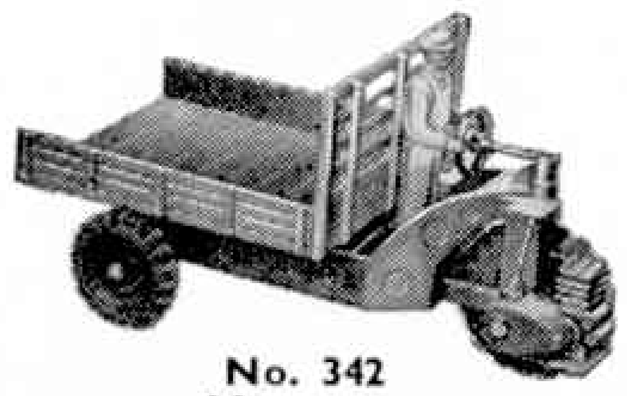

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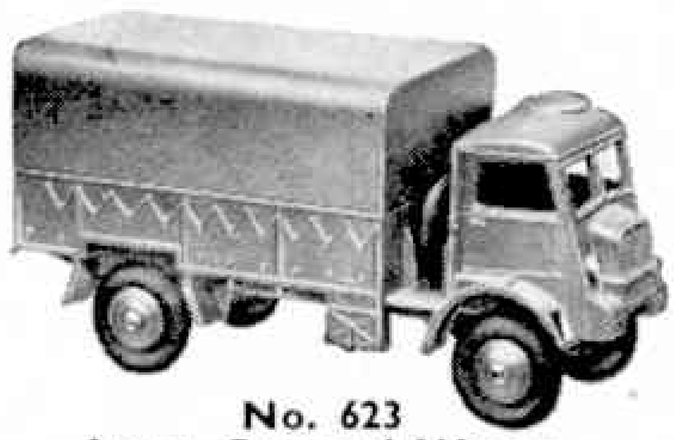

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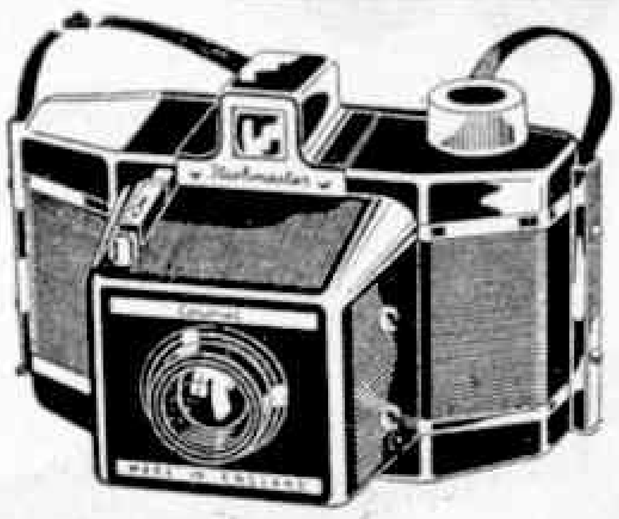

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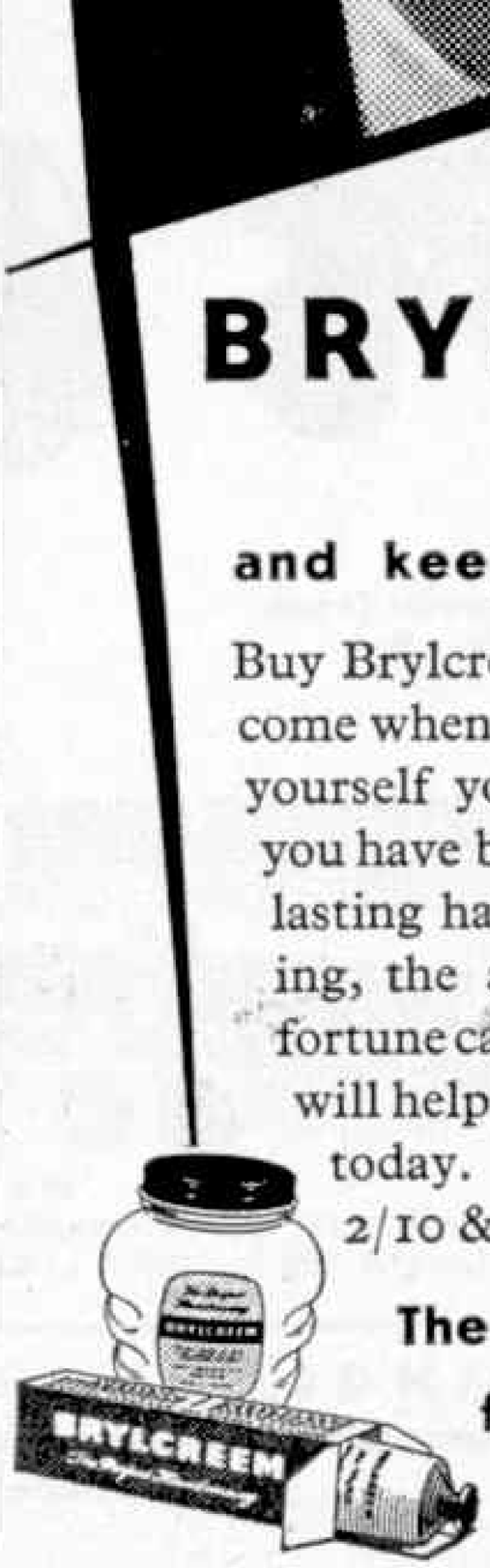

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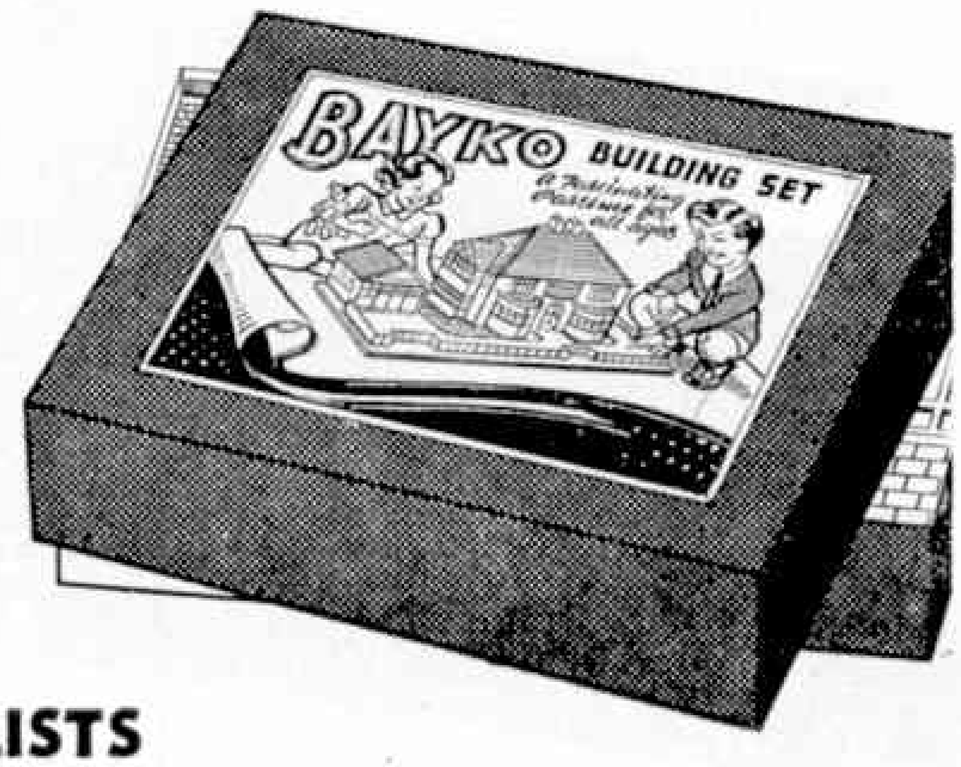

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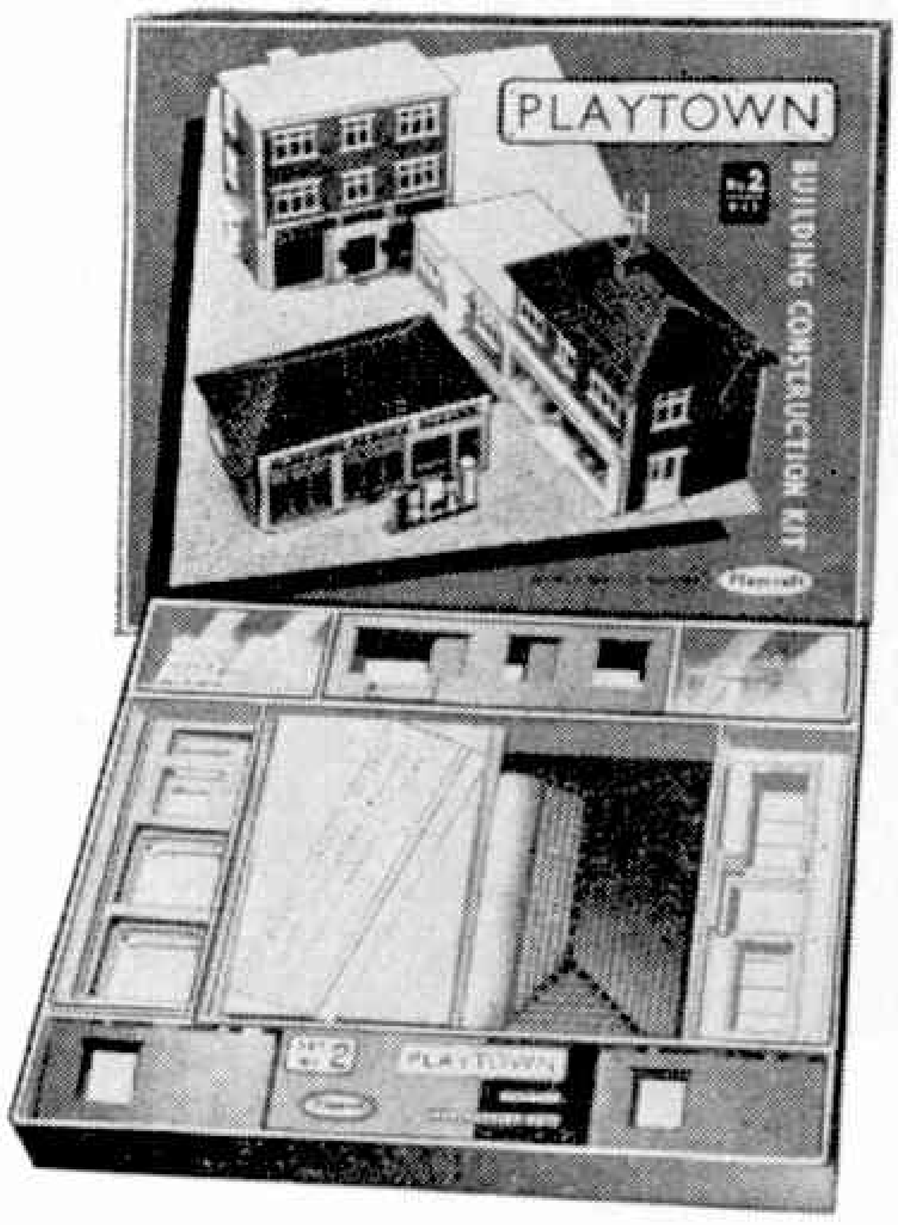

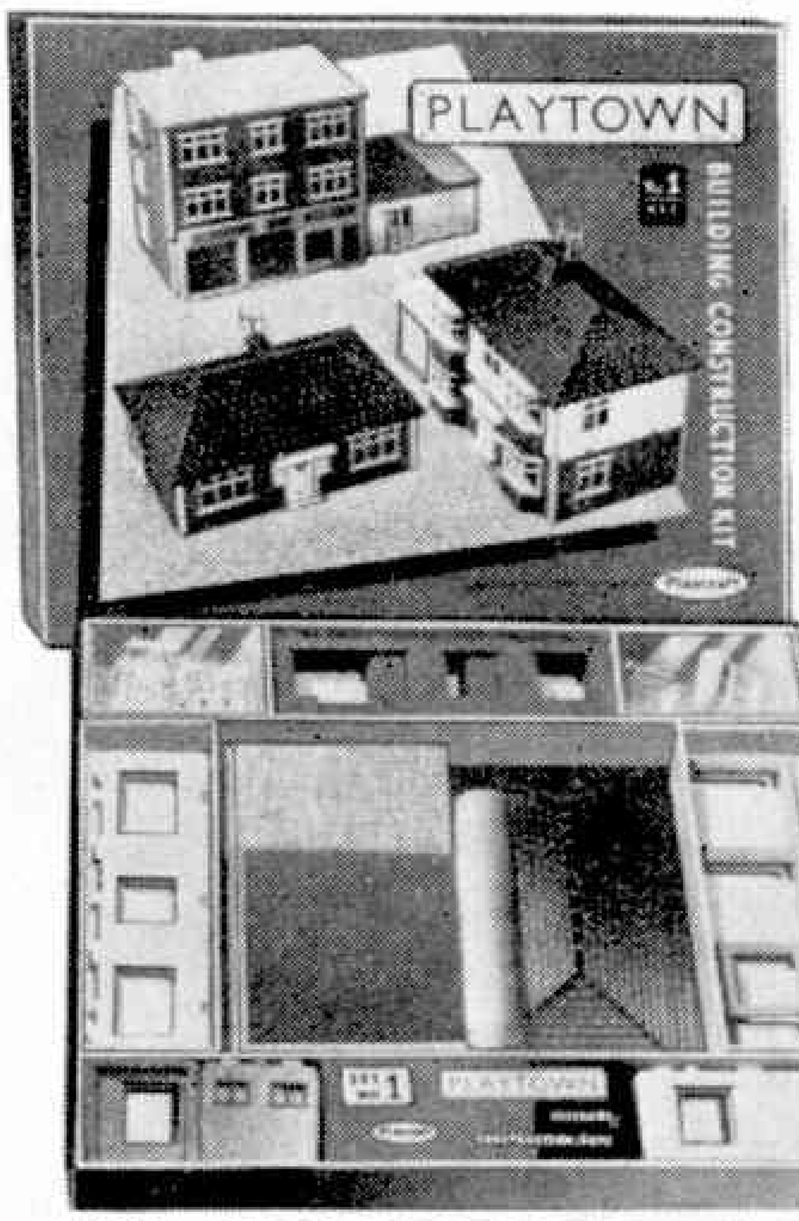

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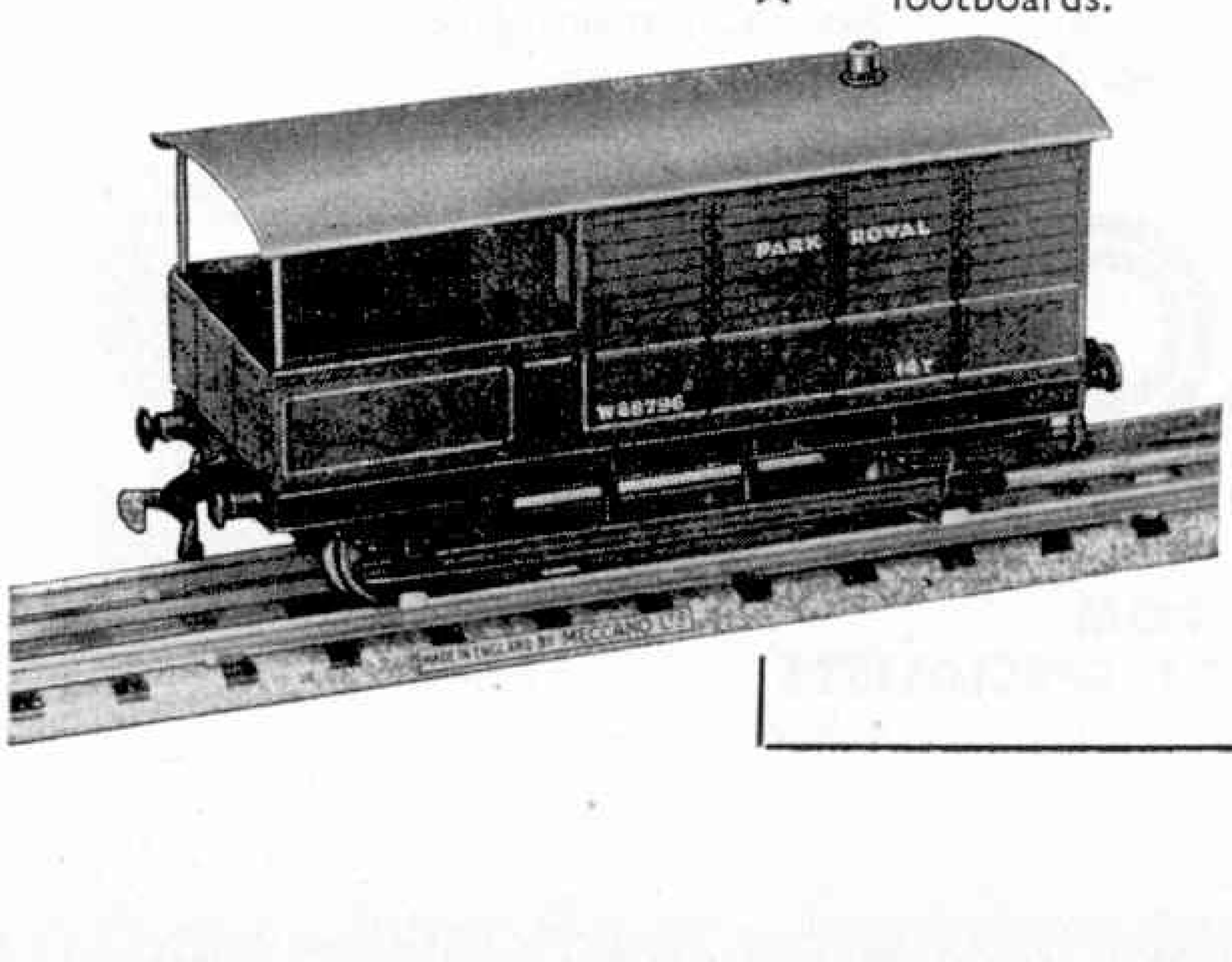

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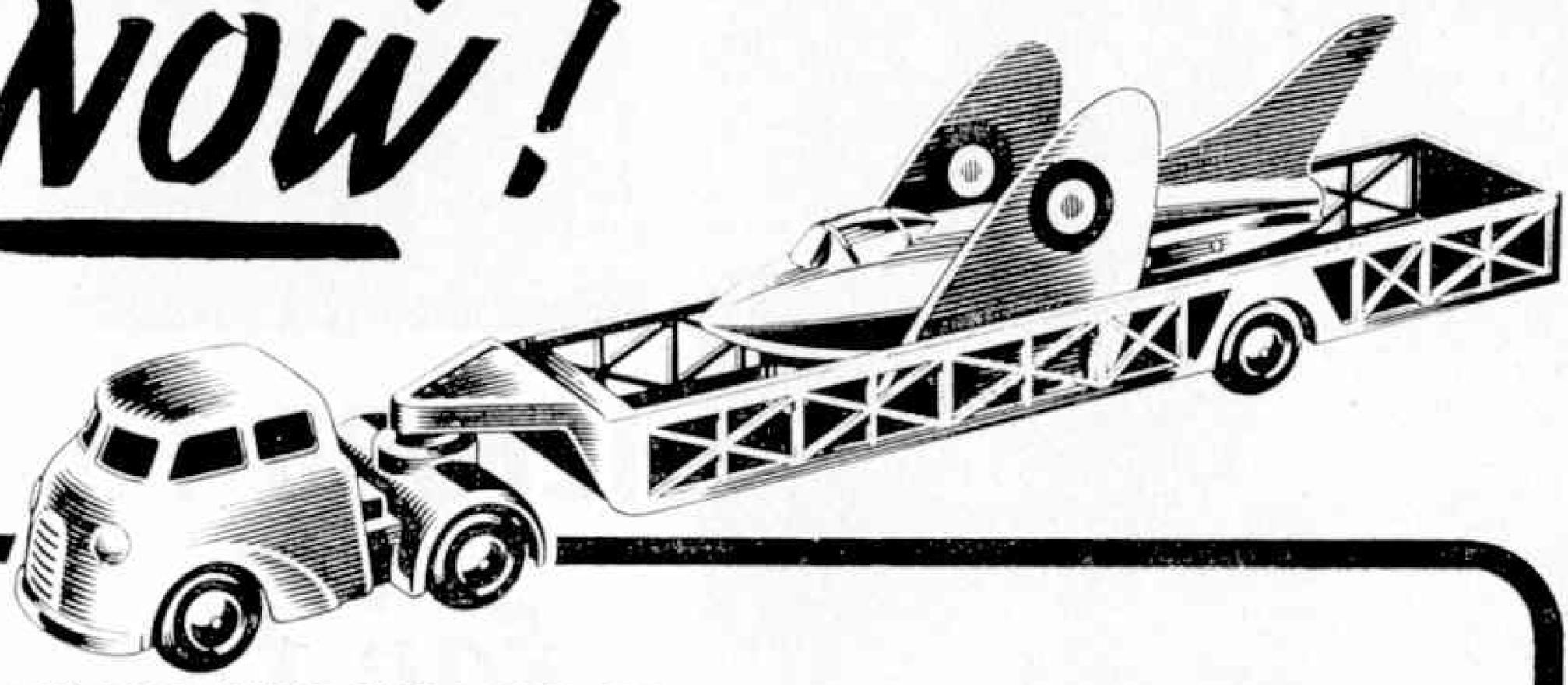

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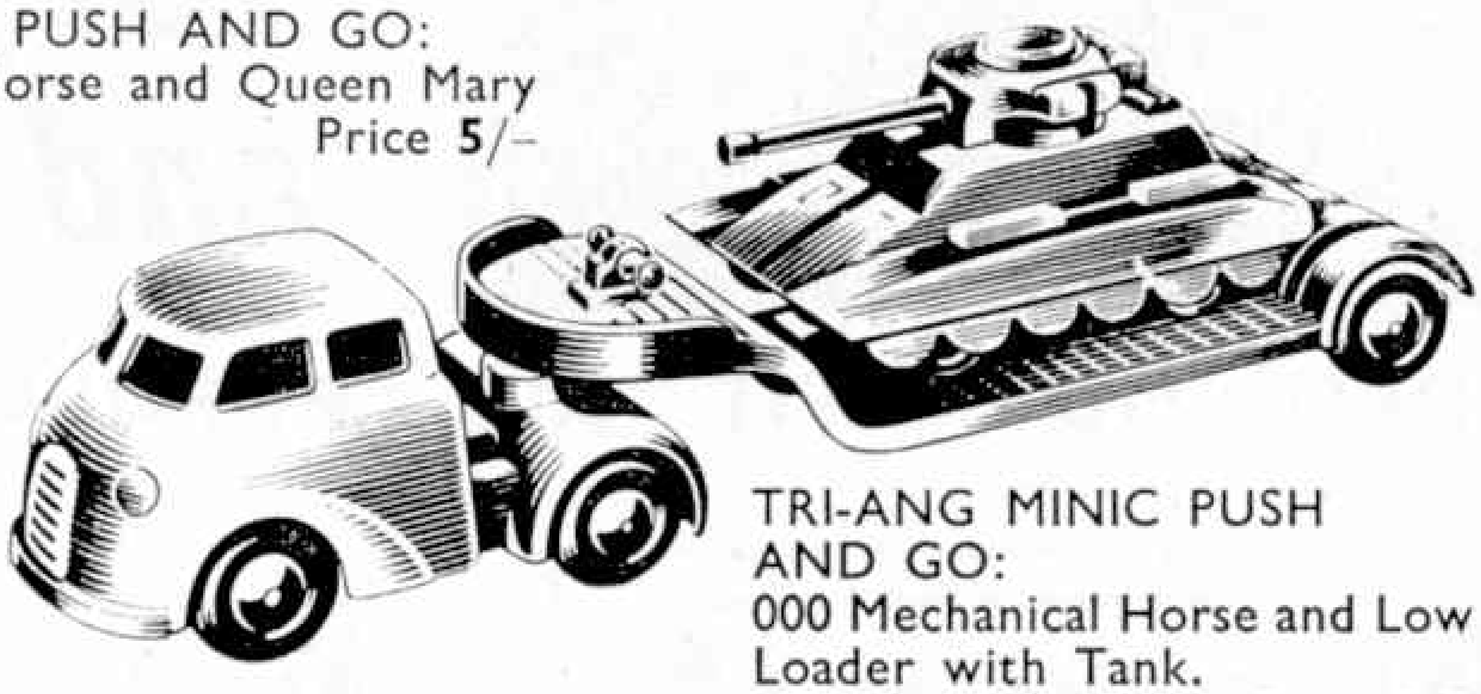

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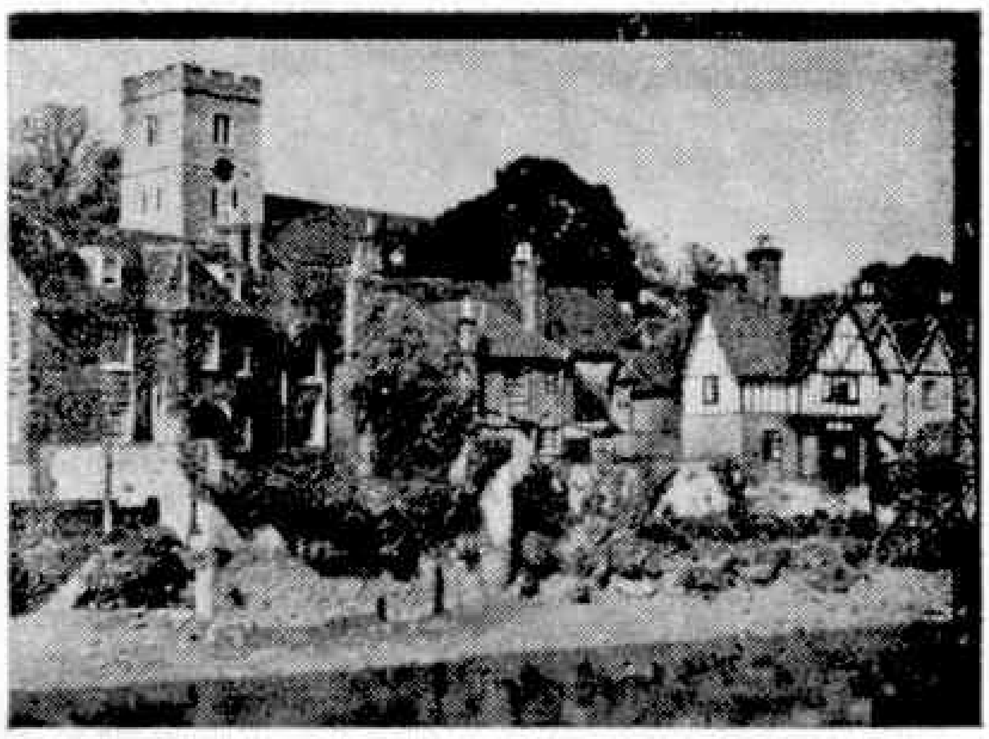

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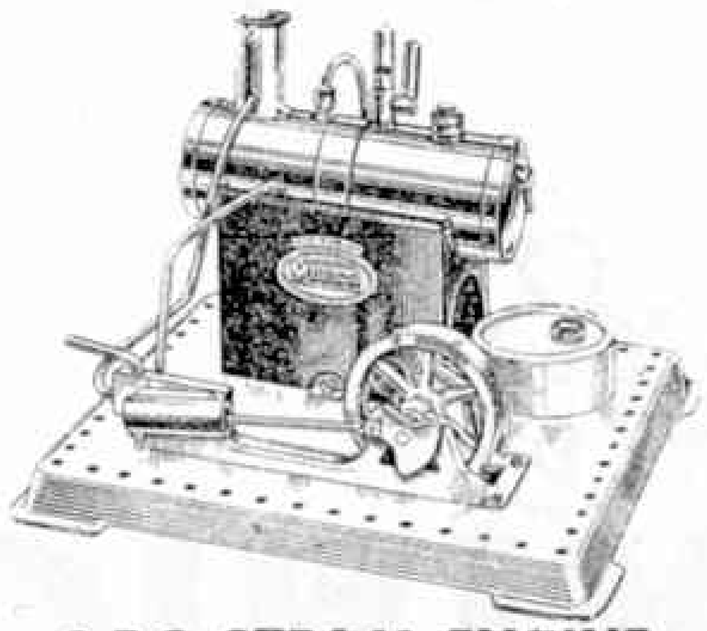

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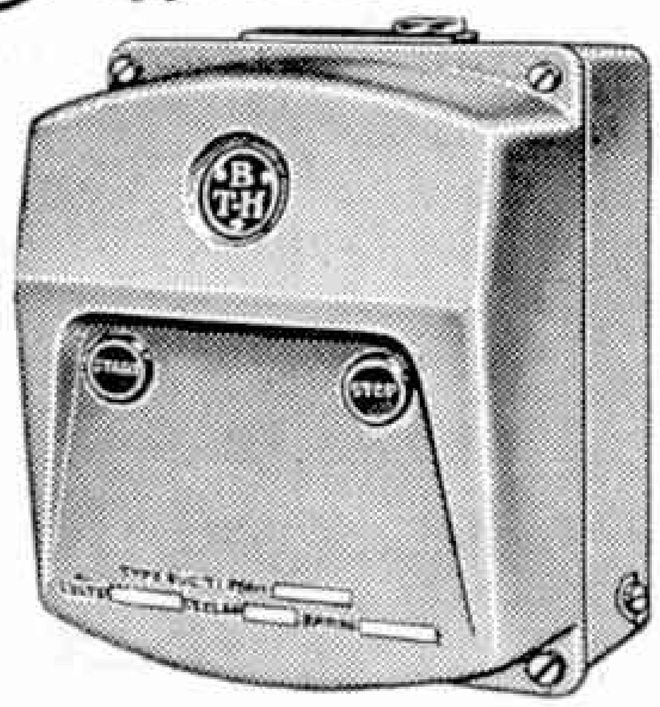

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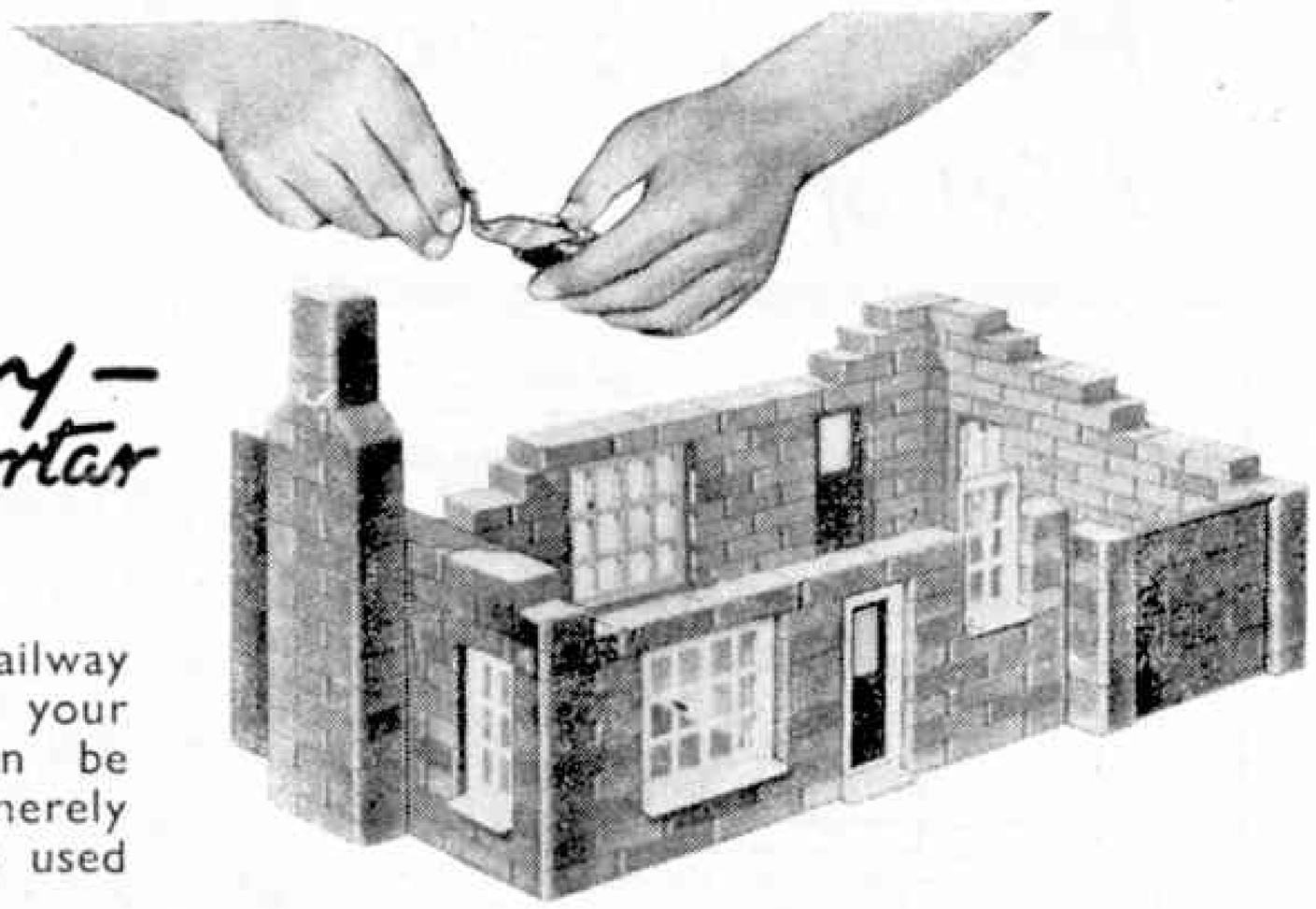

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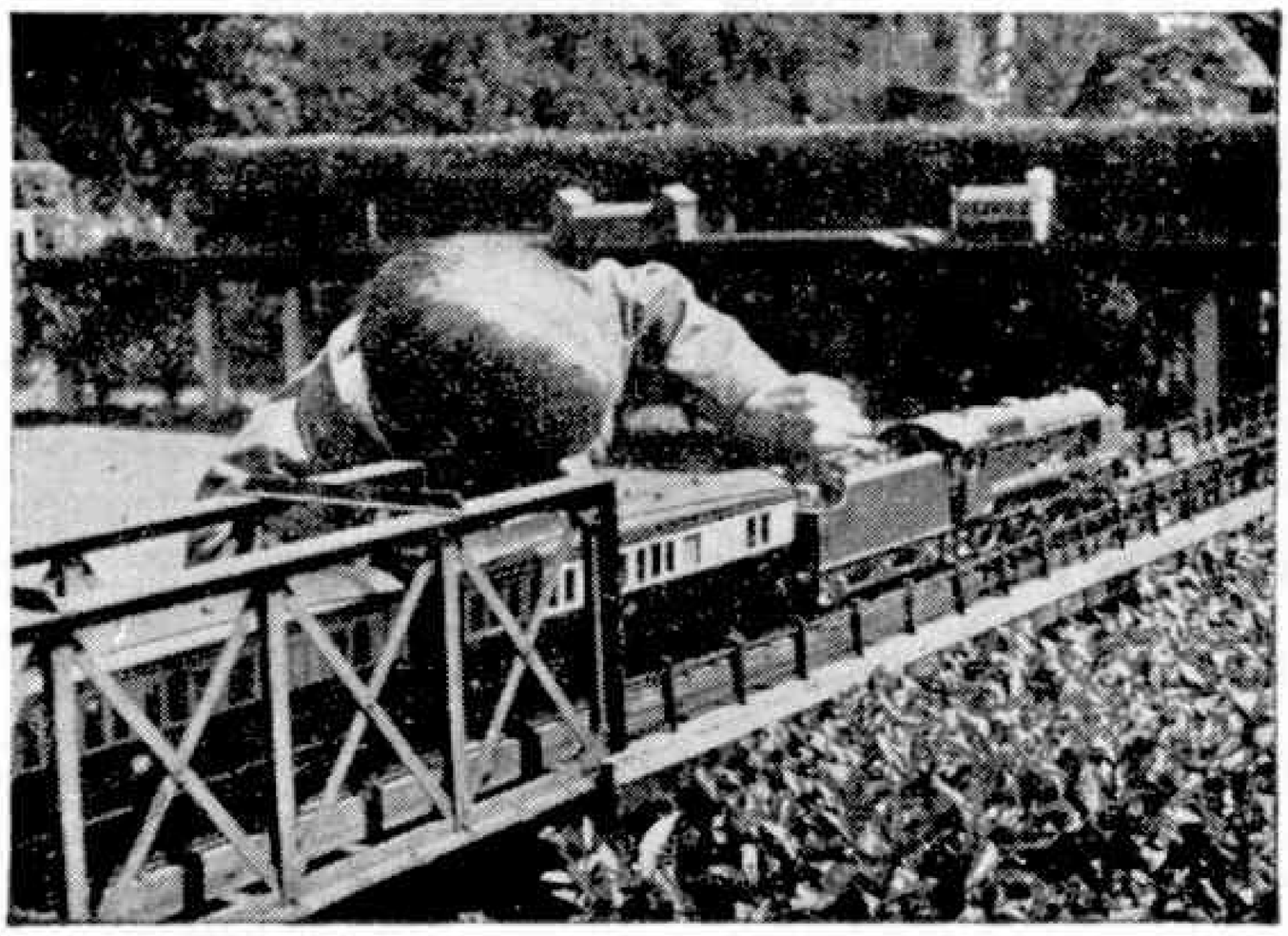

. . and make them *now* with dry, sunshiny days ahead and the long light evenings of summer.
What are your materials? Track parts, a few lengths of wood, a pound or so of mixed sand and cement and whatever else your ingenuity may suggest. So easy is it to begin this boundless, fascinating . . . . .
And what an attraction it will be, and how your friends will admire it! There's twice the interest in a garden that is served by a real live working railway.
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Next Month: WORLD'S BIGGEST BANGS

MECCANO MAGAZINE

Editorial Office:
Binns Road
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England

EDITOR : FRANK RILEY, B.Sc.

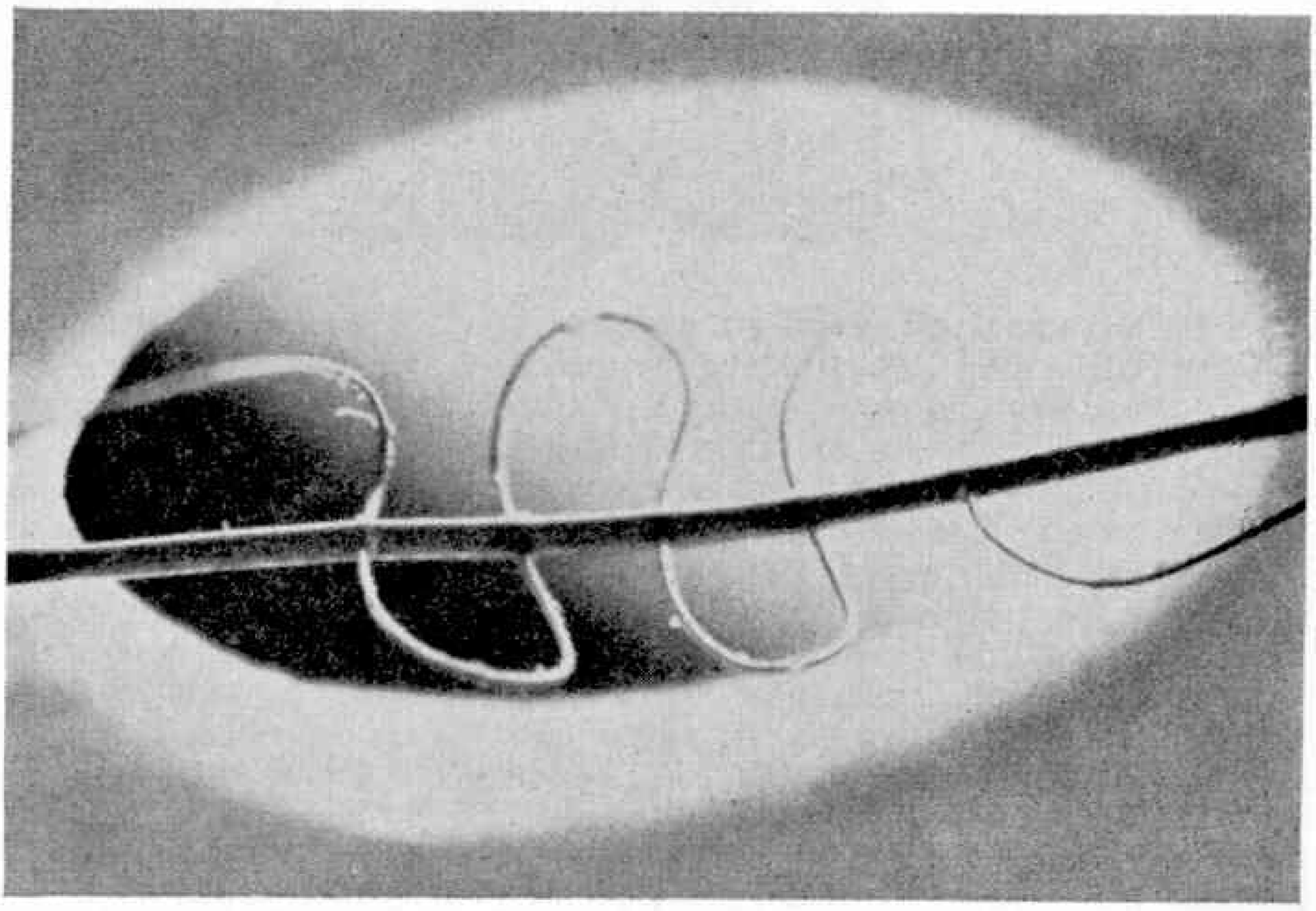
Vol. XLI
No. 4
April 1956

What is Your Loudest Noise?

At the top of the page is the promise next month of an article on the world's biggest bangs. When you saw it you probably began to think about all the loud noises that you have heard, but how many of you could rightly name the biggest of all noises on record?

I am speaking of real noises. When a poet wrote of the embattled farmers of North America firing "the shot heard round the world" he was referring to the ideas of freedom and independence behind the shot and not to the actual noise, which of course did not travel so far. Ideas are much louder, with effects that last much longer, than any actual noises associated with them.

Some of you will think of the noise of the explosion of a hydrogen bomb. Well, this latest effort of our scientists is a pretty loud noise. It is possible that the uproar of the tremendous atomic explosions that produce the intense heat and radiation of the Sun, or of the myriads of mighty stars in the universe, would be more than sufficient to carry right round the world. But these are cut off from us by space, through which sound will not penetrate, and by the immense distances of the Sun and the stars, and the hydrogen bomb explosions we have managed to produce on Earth seem to be more limited in range, and in their visible effects, than the bangs the article will describe.



Here is a mystery photograph. The only clue that you are given is that it is something seen through a microscope. Try to think out what it may be before turning to page 202, where you will find the solution.

Now what are these? I think I will leave you to try to think out what they are, so on this page I have given you two little mysteries at opposite ends of the range as far as size is concerned. One is microscopic—the solution is given in this issue—and the other is immense. Write to tell me what your idea of the world's biggest bang is.

The Editor

THE MODERN TREASURE HUNT

By
Eric Ford

ALMOST exactly a hundred years after the Californian Gold Rush of the middle of the last century prospectors are once again on the move in the United States, seeking the wealth which lies beneath the Earth's crust. This time, however, the seekers are not taking part in a wild stampede for personal riches in a search for a metal of little *practical* use to Man. These twentieth century American prospectors are looking for uranium, and the "rush" is an orderly, scientific search for the metal that holds out such great promise for a better life for the world.

This search for the silvery white metal, which few people have ever seen, has brought some 5,000 prospectors to the Colorado Plateau, where formerly only cattle and sheep grazed and herds of antelope roamed. Here, where meet the four western American States of Utah, Colorado, Arizona and New Mexico, some 800 uranium mines are spread out over a wild stretch of country, more than 110,000 square miles in extent.

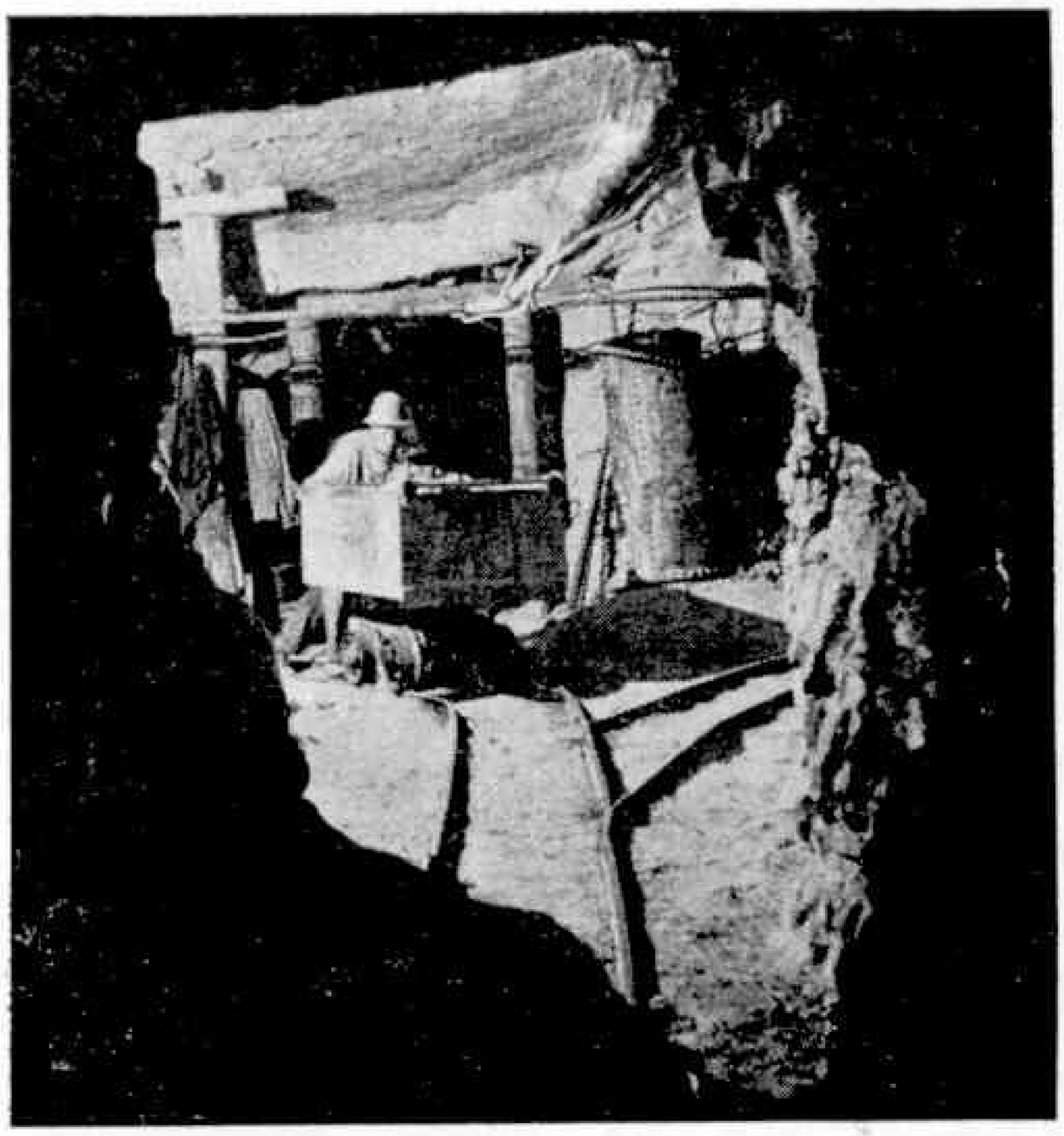
Most of these mines are situated near the town of Moab in the State of Utah, a one-time sleepy community founded by pioneers of the Mormon religion in 1855. During the past few years Moab's population has trebled, straining its resources to the utmost. The housing shortage is now so acute that tents line the highway for a mile outside the town. One wealthy prospector lives in a caravan, and businessmen run their million-dollar companies from offices set up in the back rooms of drug stores and sometimes even from up-turned empty packing cases in the open street.

Today uranium is hunted as feverishly as gold was in past ages, and this article gives a glimpse of the uranium rush in the western United States. The central figure in the picture at the head of the page is Howard Balsley, who 40 years ago found uranium near Moab, Utah, while searching for radium. He is explaining a geological map to two modern fortune hunters.

Outside the town are the mines themselves, bearing such colourful names as *Temple Mountain*, *Black Jack*, *Apache*, or *Montezuma*. Many of these mines are quite primitive, some of them being merely small tunnels in the hillsides in which two or three men work with an air compressor and drill, picks, shovels and a wheelbarrow. Miners usually wear helmets to protect their heads from falling rock, using small carbide lamps to light the winding tunnels.

It is said that when Jack Turner, now worth £6,000,000, was first prospecting in the region, he dug the ore from his primitive mine while his wife drove it in truck loads to the processing station.

To start a mine, the prospector first



Many of the uranium mines near Moab are small and primitive, consisting of no more than a tunnel that follows the wanderings of the ore.

explores the public land with a geological map and a Geiger counter, although some of the bigger operators now use aeroplanes equipped with scintillators, devices that measure gamma rays on the Earth's surface and are more sensitive than the Geiger counter. Once the presence of uranium is suspected, the claim must be staked and recorded in the County Court House as in the old Gold Rush days.

Most of the mines are owned by individuals or families. But some are large concerns in the hands of companies, which are headed by the dozen or so men whose names are rivalling those of the Gold Rush heroes who "struck it rich." Wealthiest of them all is Charles Steen, once a struggling young geologist and still too interested in the business of wresting uranium from the Earth to take time off to spend his wealth.

Although Moab is the spot where the miners congregate, the business centre of the uranium boom is at Salt Lake City, whose many brokers' offices have huge quotation boards on which the latest share prices are chalked up for the information of excited crowds. Even the restaurants have miniature copies of these boards for the convenience of patrons. Nowadays share prices have become fairly stable, very different indeed from the day in June 1954 when an estimated 7,000,000 shares changed hands on Salt Lake City's Mining and Metals Stock Exchange.

Yet it is in Moab that the excitement of Salt Lake City's business deals takes on reality, for here can be seen the actual ore, greenish yellow, brown, sometimes red-stained, streaking the canyon walls. Here the trucks rumble over the rutted roads with cargoes worth thousands of pounds.

To the Mormon elders of Moab, the coming of the uranium boom is in the nature of the fulfilment of a prophecy made by the great pioneer Mormon leader, Brigham Young, to the 41 brave souls who founded the community a century ago. Finding that they had to lower their wagons down over the canyon rim with ropes, some of the colonists began to object, suggesting that they should push on to California to join the hunt for gold. It was then that Brigham Young restrained them with words of prophetic intent:

"Work and sacrifice," he said, "and stay with the land. Some day the Earth itself will bring you riches."

How right he was!

This unpretentious group of buildings in the scrub of a shallow canyon near Moab is the "Mi Vida" mine, which has yielded the most concentrated ore yet found in the United States.

Project to Production

How Aircraft are Designed and Built

By John W. R. Taylor

OUR cover picture this month shows Viscount air liners on one of the twin production lines in the Vickers-Armstrongs factory at Hurn in Hampshire. By the time you see it, the aircraft illustrated will probably be on the other side of the Atlantic, flying on Trans-Canada Air Lines services linking New York with Toronto and Montreal.

Introduction of Viscounts on to these routes in 1955 led to a tremendous increase in business. In the last four months of the year, 17,000 more passengers flew by T.C.A. from New York to Canada than in the same period of 1954, the best month being December, when the number of people carried was nearly doubled. There could be no better proof of the regard felt by the Americans and Canadians for the smooth, quiet comfort of the Viscount, with its four Rolls-Royce Dart turboprops.

Mr. George R. Edwards, designer of the Viscount and Vanguard. He is also Managing Director of Vickers-Armstrongs (Aircraft) Ltd., to whom we are indebted for this illustration and for the photograph on which our cover is based.

Similar reports of increased passenger bookings are coming in from every country where Viscounts are operating, and B.E.A. expect to set new records towards the end of this year, when the first of their larger V.802 Viscount Majors enters service. Beyond the V.802 is the faster, more powerful V.806, and the later V.840 series with even higher performance. Nor is that the end of the line, for already Vickers are working on the V.900 Vanguard, an entirely new design, but with all the experience of years of Viscount operations built into its sturdy structure.

Few people outside the aviation industry seem to know how a modern aeroplane is designed and built, or why it takes as long as four years to get it into service after the prototype has flown. We even hear criticism in the House of Commons that Britain's aircraft industry is inefficient because of the time it takes to perfect new aircraft.

Yet, when we examine the facts, it is obvious that the Americans take just as long. For example, although the prototype of Boeing's Model 707 jet-liner flew in July 1954, and has proved incredibly successful in its test flights, they do not expect to deliver the first production 707 to Pan American World Airways before the end of 1958, at the earliest. By comparison, the first Vickers Vanguard should fly in 1958 and is scheduled to enter regular service with B.E.A. two years later.

The story of the Vanguard is typical of most modern air liners, and is linked closely with that of the Viscount, to which it is a team-mate, not a successor.

As explained in my article in the May 1955 *M.M.*, development of the Dart turboprop has made possible steady improvement in the Viscount's payload and performance. The prototype Viscount V.630 had four 1,125 e.h.p. (equivalent horse power) R.Da.1 Darts and carried 32 passengers. It was too small for B.E.A.; and when the production V.701 entered service its 1,547 e.h.p. R.Da.3 Darts enabled it to carry up to 53 passengers at a cruising speed of 302 m.p.h.

That was only a start, and the new R.Da.7 Dart is giving so much power (2,100 e.h.p.) that the latest Series 700

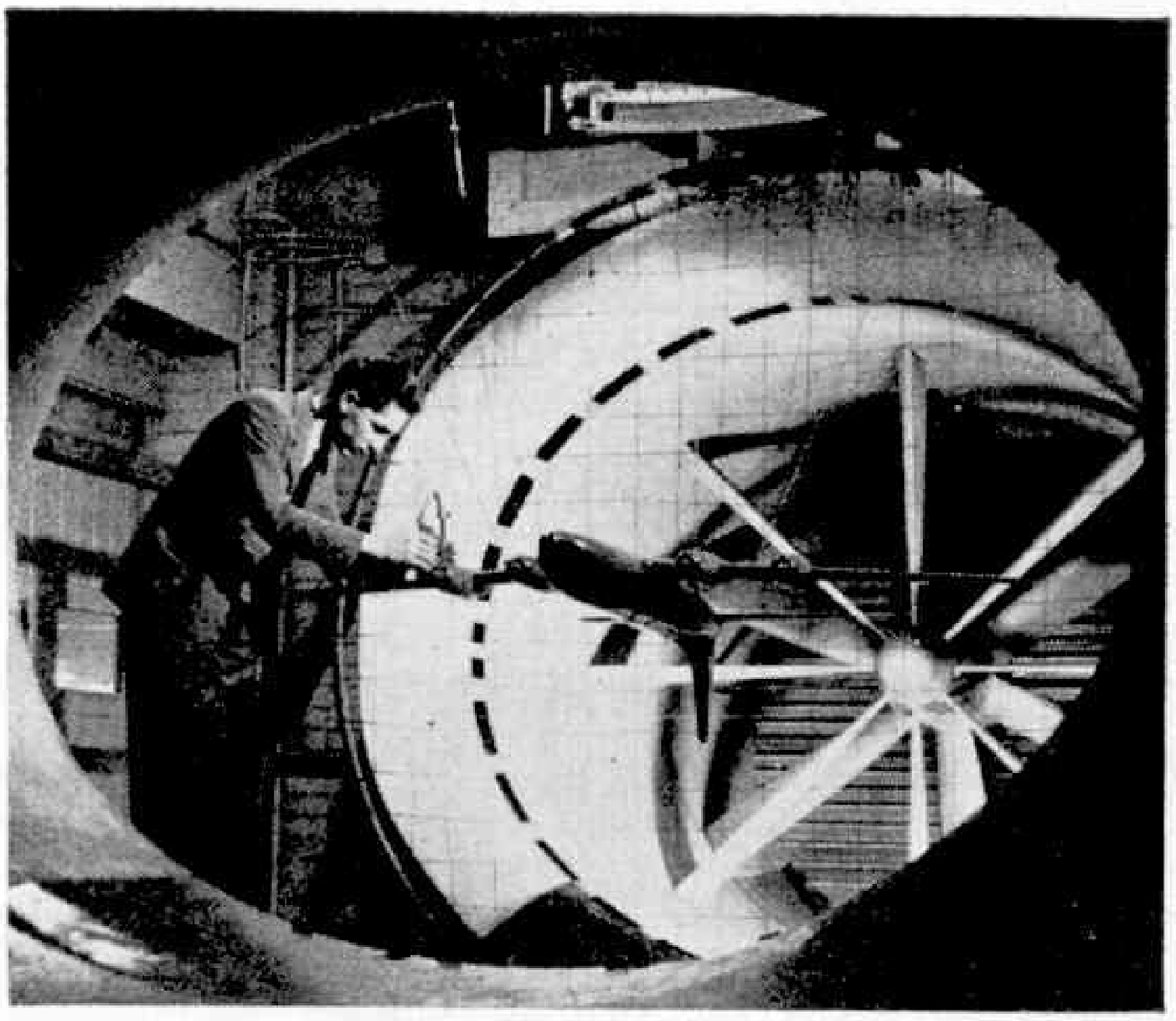
Viscounts will cruise at 365 m.p.h. and carry a full load of passengers and freight over stage lengths of 950 miles, compared with just over 600 miles with the original V.701.

This increased power has also enabled Vickers to produce the Series 800 Viscount Major, with "stretched" cabin accommodating up to 70 passengers; and it is expected that the final Series 840 version, with R.Da.8 turboprops, will cruise at no less than 400 m.p.h.

Yet, B.E.A. realised three years ago that even a still larger version of the Viscount Major would not meet all their requirements by the early 1960s. For a time, they believed the answer was a jet-powered air liner with four Rolls-Royce "baby Conway" by-pass turbojets. Then it became apparent that equally good performance could be obtained more economically and quietly by using four of the projected Rolls-Royce R.B.109 turboprops, which had been designed to start at 2,500 h.p., where the Dart left off.

B.E.A. had such precise ideas on what they wanted that, by the time all the requirements had been put on paper, the resulting "Specification" was a book of 50 pages. Basically, it asked for an air liner able to cruise at 425 m.p.h., carrying between 90 and 100 passengers in three cabins which had to be more comfortable than any existing today.

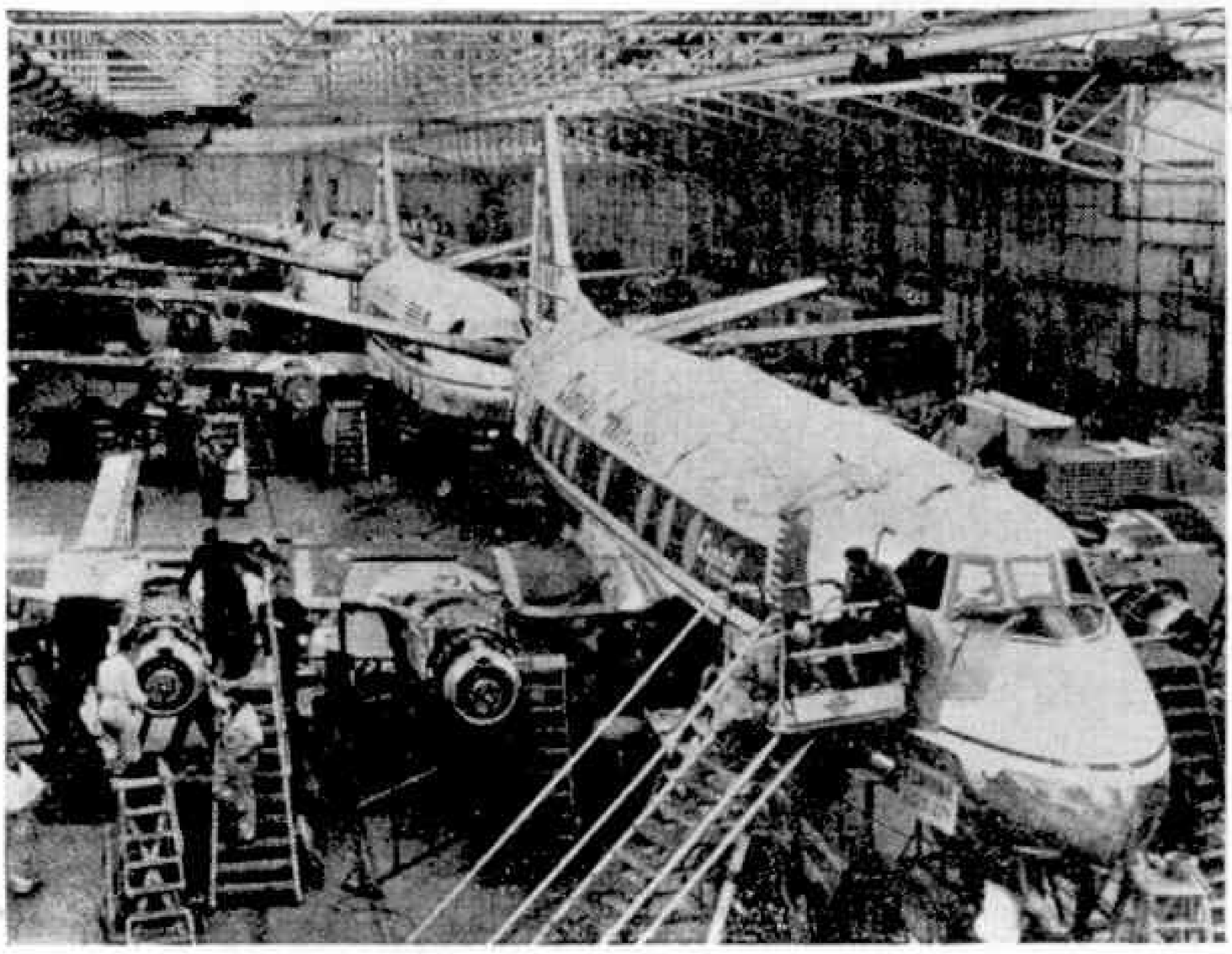
The new aircraft had to be able to operate from all major airfields used at present by B.E.A., even the short 4,200 ft. runway at Jersey; to land slowly and have an operating cost at least 10 per cent. less per passenger seat than the Viscount Major. Its cabin had to be wide enough to give an 18 in. aisle with five-abreast tourist seating, with large "Viscount-type" windows, built-in passenger steps and a noise level in the cabin even lower than the Viscount.



Design work on a new aircraft type includes a vast amount of wind tunnel research. Here a model of a Britannia aircraft is being tested in this way. Photograph by courtesy of The Bristol Aeroplane Company Limited.

Nor was that all. B.E.A.'s passenger traffic falls off sharply in the winter; so the Corporation asked that the freight holds of the new aircraft should be big enough to carry an extremely heavy load of cargo when passengers were few.

Although this Specification was unusually detailed, it gives an idea of the kind of design and performance requirements demanded by an airline in search of new equipment. A military



Vickers Viscounts for Capital Airlines, U.S.A., in production at the Vickers-Armstrongs factory at Hurn, Hampshire.

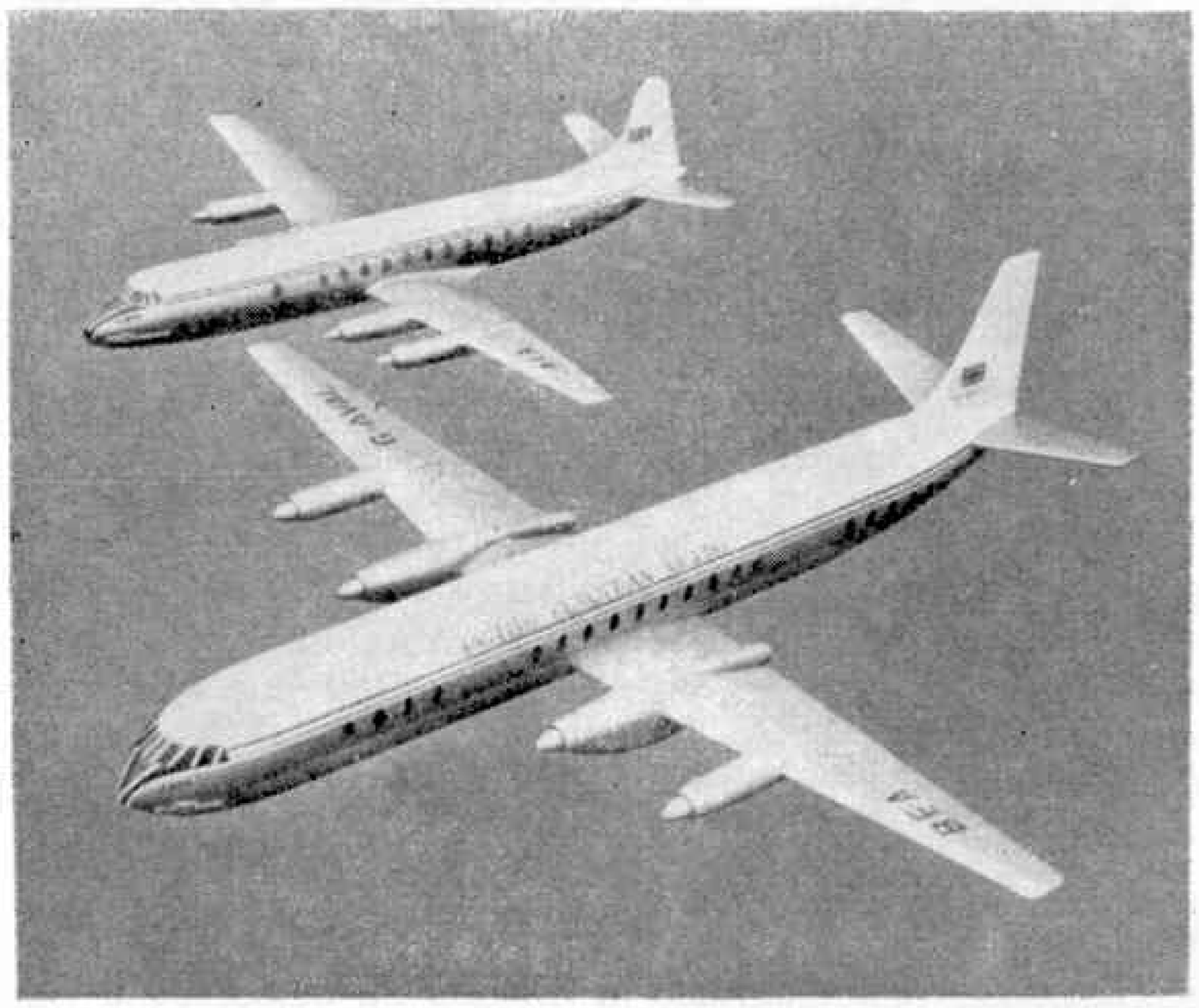
Specification, issued by the Ministry of Supply on behalf of the Air Ministry, would be on the same lines, but with the emphasis on high performance, and a payload of bombs, guns or rockets instead of passengers and parcels.

Another important difference is that, usually, several companies submit designs in competition for a military Specification. The Ministry of Supply then order prototypes of the one or two designs that look most promising.

In this case, B.E.A. went straight to Vickers, and the Vanguard will result from the same B.E.A.-Vickers-Rolls-Royce partnership that made the Viscount such an outstanding success.

At first, B.E.A. favoured a high-wing arrangement, because this would give all passengers a good view downwards under the wing. But it would have necessitated either a very long undercarriage retracting into the engine nacelles, or a very narrow one retracting into the fuselage. Neither was desirable and Vickers settled on a mid-wing arrangement, with a figure-8 section double-deck fuselage. This kind of section offers great strength and space, with passengers in the top cabin and huge freight holds below the cabin floor.

In fact, the Vanguard will have a fuselage of greater volume than any air liner in service today, and will carry so much freight that it will make money on the London-Paris route with only 30 of its 93 passenger seats filled.



Models of the V.800 Viscount and (foreground) V.900 Vanguard.

It was not easy to decide this layout and Vickers produced no fewer than 60 different design studies before choosing the present one. Even now it is not finalised, and when the prototype flies it may differ from the model shown on this page. For example, there will probably be more windows in the nose and even larger freight doors.

If the Vanguard had been a fighter or bomber, no details of it would have been published at this stage. A military aircraft is so secret that, even when it first flies, only one or two pictures may be published, each carefully chosen to reveal as little as possible of the wing shape, equipment and size.

But Vickers hope to sell the Vanguard to foreign airlines, in competition with other aircraft. So they must tell people what they have to offer, without giving away too much information to their rivals.

By the time they announced the Vanguard last October, they had been developing it for two years; but detailed work on the chosen design had not started until 1955, when B.E.A. decided it was the aircraft they needed. It will take another two years to complete the design work and build the first Vanguard, which in this case will not be a prototype, but the first of 20 for B.E.A. To order production aircraft "off the drawing board" in this way is a measure of the confidence the Corporation have in the ability of Vickers' design team, under the leadership of George Edwards.

There will be much to do in these two years. Beautifully made wooden scale models, with powered propellers, moving controls and retracting wheels, will be tested for many hours in wind tunnels to indicate the aerodynamic efficiency of the design and the performance and control characteristics that can be expected from the actual aircraft.

A full-size wooden "mock-up" will probably be built, in which equipment and furnishings can be installed, for approval by pilots and by B.E.A. A complete aircraft will be built solely so that it can be twisted and bent in great structure test rigs to prove its strength. A fuselage may be immersed in a water tank, and pressurised

(*Continued on page 222*)

Watch Your Step

Road Safety in 1956

By Alan W. Day

WITH every year that passes traffic on the inadequate roads of our island becomes heavier and the grim toll of highway accidents mounts. Unless the Government realises its responsibility, and puts in hand without delay major works, it would appear to be abundantly clear, if motor vehicles continue to multiply at the present rate, that our main arteries will be so congested that progress between towns at a speed of more than 20 m.p.h. will be impossible. The prospect in built-up areas is equally black and the outlook from a pedestrian point of view is far from bright.

It is therefore imperative that road safety becomes the concern of every single individual of whatever age. Everyone must contribute to this life or death cause—pedestrians, cyclists, motor cyclists and drivers of all types of cars and lorries. The Royal Society for Prevention of Accidents, together with hundreds of local Road Safety Committees, are continuously in action, but it is only the individual effort that really counts. Police and educational authorities preach the gospel of safety at every opportunity.

Pedestrians and drivers, with but few exceptions, know full well what they should do and should not do, but they are failing hopelessly in increasing numbers. Only if we can bring to an end absent-mindedness, carelessness and impatience, will the toll of the road speedily decrease.

No one will quarrel with the contention that a desire to get hurt or to cause suffering to another is unnatural. During the war everyone was profoundly shocked and grieved when people were killed during air raids, yet the carnage on our roads goes on daily and is accepted by all too many as "one of those things." Such complacency is deplorable—what can we do about it?

Driving in and out along a line of drums in the control test of the R.A.C.-A.C.U. Training School at Crystal Palace, where all the photographs reproduced as illustrations to this article were taken.

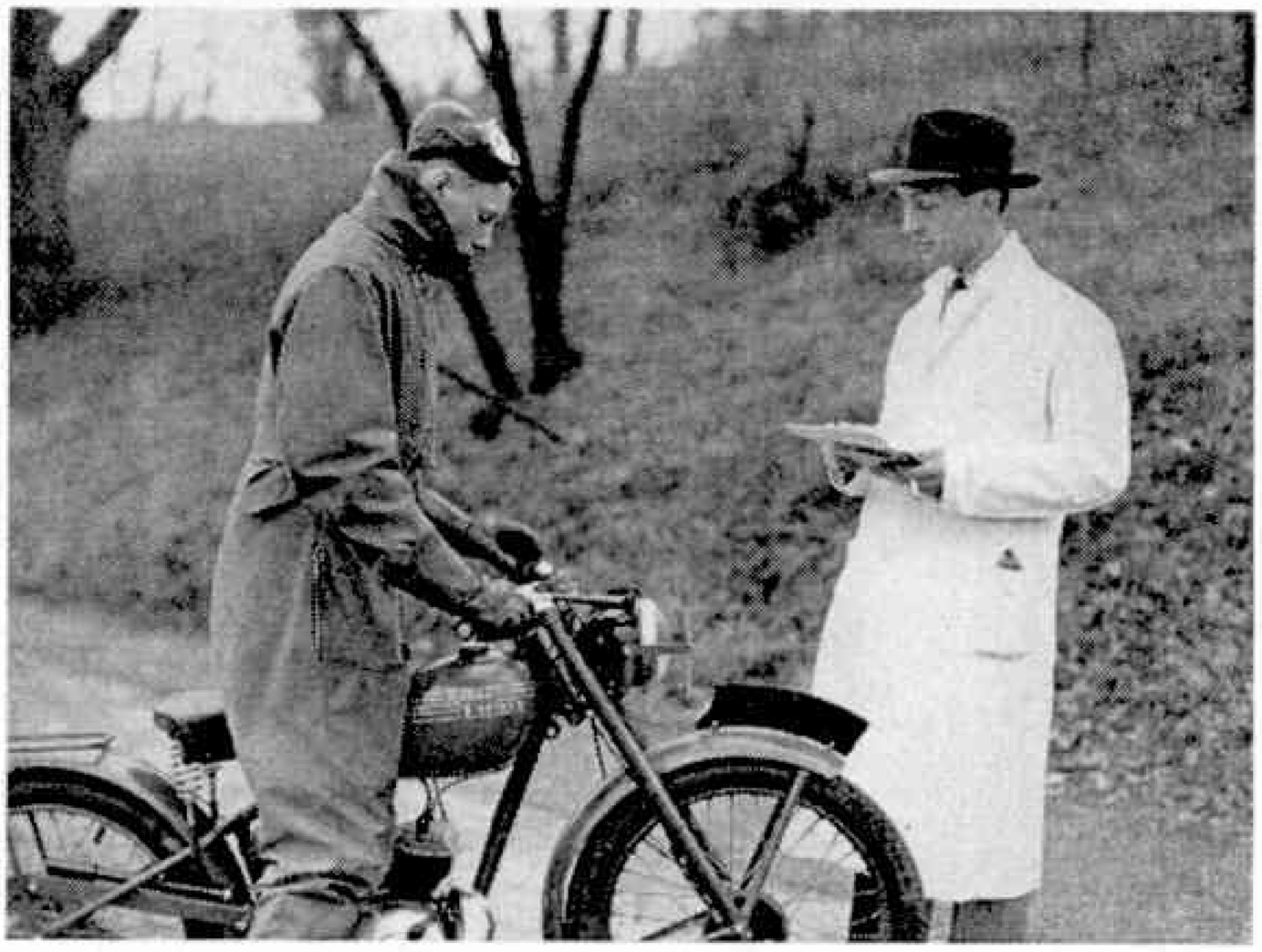
The common tendency to blame road conditions, visibility, speed or the other party must be overcome. Anyone, walker or driver, involved in a road accident, however slight, must closely cross-examine himself and honestly assess the degree of his own blameworthiness—and this should also be done even if a threatened accident is averted. Having arrived at a conclusion, a vow must be taken that it will not happen again.

Recently, some two hundred insurance claim forms were carefully studied and analysed and it was abundantly clear that at least three quarters of the accidents reported should never have occurred.

In the remainder, the causes included dogs not under control, flies in drivers' eyes, dazzle, unlit obstructions, physical infirmity and sudden illness.

First, let us see what pedestrians can do. To varying extents we all use the highways as walkers, so let us dwell on the sins of commission and omission of those who cross roads on foot. Here are some good rules.

Never step off a kerb without pausing and looking both ways—regard the highway as you would a railway at a level crossing.



A motor cyclist learner undergoing training. Photograph by courtesy of the "Motor Cycle."

Always use a zebra or controlled crossing where one exists in the vicinity, even if it entails walking a few yards in an undesired direction.

Learn to be a better judge of the speed of approaching vehicles, and the distance required by drivers to pull up without skidding. Extra allowance must be made when roads are wet or frosty.

Never cross a road diagonally, especially at intersections. At junctions, even if there are traffic lights, watch for vehicles filtering from side roads.

Be particularly vigilant when negotiating one-way streets.

Always go to the aid of the infirm and children. Regard this as a responsibility.

Acknowledge the action of a driver who halts to enable you to cross in safety. It will encourage him to develop the habit and will be observed by others.

Now turn to the many cyclists who use our roads. Statistics show that they are involved in a deplorable number of mishaps and here again the conclusions arrived at by insurance companies are most useful.

Unduly high saddles and low handlebars have been found to be contributory causes of many accidents; efficient and comfortable control and ease of all-round vision are essentials.

Refrain from zig-zagging in and out of slow moving or stationary traffic; it may close up or move off unexpectedly.

Don't follow closely a faster moving vehicle, using it as a pacemaker.

A bicycle has its limitations—get to know them. Happily, tramlines have disappeared in most parts of the country, but the hazards of uneven surfaces, manhole covers, excessive cambers, and the like, are still with us and want watching.

Much has been written and said

The training course includes practical tests at road crossings and junctions.

about rear lights for cycles and the *rights* of cyclists. Forget it all and concentrate on personal preservation. Fit a rear light—the brighter the better—and remember that reflectors are often far from effective.

Riding two abreast may be legal, but except on quiet country roads single file is much safer.

Insurance is not compulsory, but very advisable. Apart from the matter of accidental damage, third party claims may be lodged by a pedestrian or vehicle owner. The cost is low—ranging from 20/– a year for comprehensive cover to 10/– for Third Party, Fire and Theft only. Personal Accident Benefits are obtainable for an additional 10/– or thereabouts.

Next we come to the motor cyclist. Every year thousands of pedallers graduate to mechanically assisted cycles or motor cycles. Conversion to quicker travel with less effort is often undertaken too hurriedly. Road safety, from the motor cycle angle, begins with the choice of a mount, and a lightweight of not more than 200 c.c. is the ideal. Irrespective of cycling experience, a course of theoretical and practical instruction is strongly recommended. The R.A.C./A.C.U. Learner Driver Scheme provides this facility at some 60 training centres at which, for a nominal charge of 36/–, lectures may be attended and driving practice obtained on machines generously donated by manufacturers and dealers.

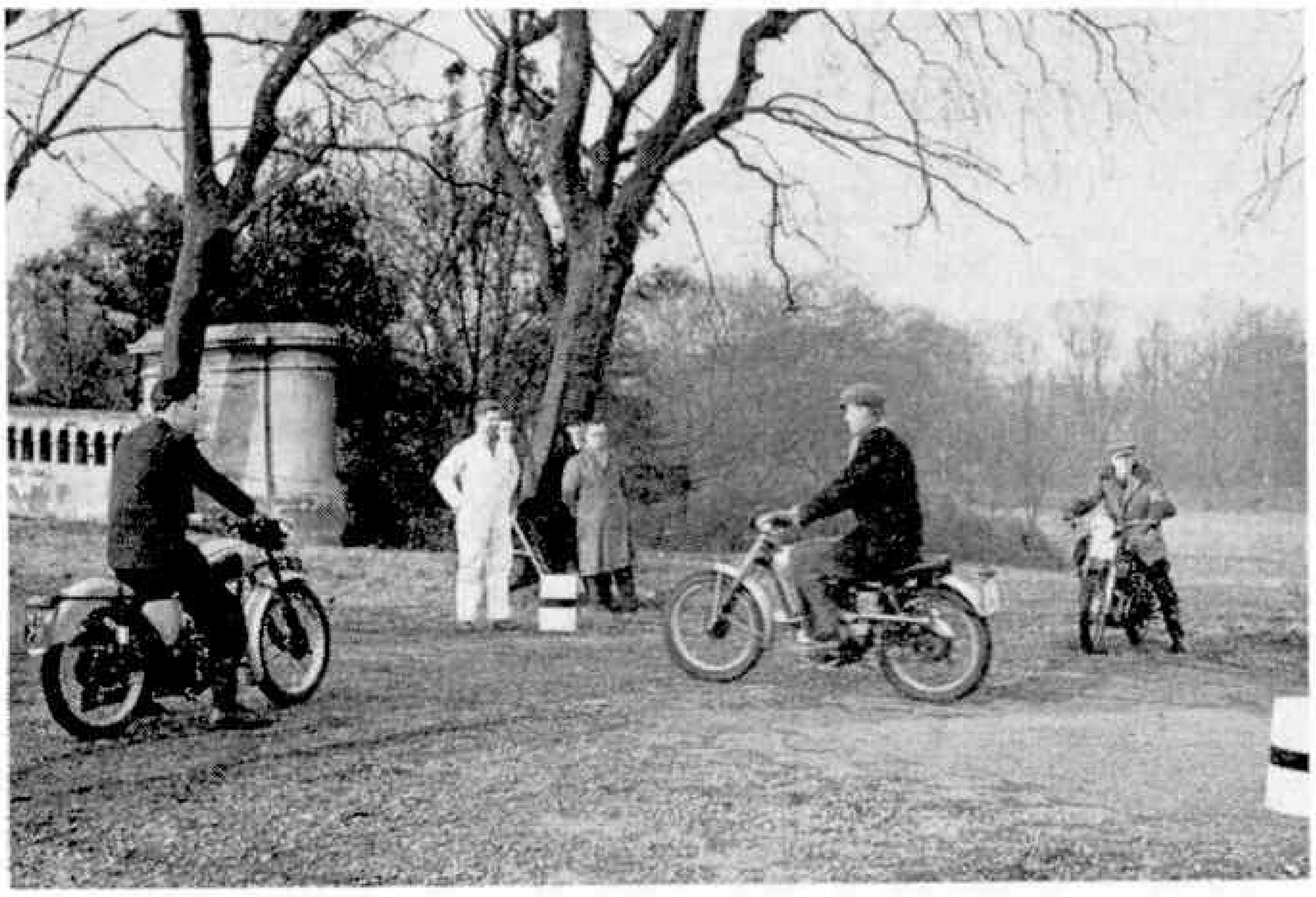
The possession of a motor cycle and a full driving licence is one of the thrills of life. Exhilarating, economical, and long-distance travel becomes possible, but it takes several years to qualify as a really experienced driver. Develop the quality of anticipation and always allow for other drivers doing the wrong thing. If in doubt, just don't!

The capacity for "smelling" trouble is a passport to freedom from accidents.

Certain all-too-common motor cycling faults, such as indiscriminate overtaking, driving too close to leading vehicles, excessive speed when taking bends, disregard of adverse road conditions and violent acceleration should be avoided. Not only do they spell trouble, but they earn a bad name for the fraternity.

A word about noise, the subject of frequent complaints. The designers of exhaust systems and the makers of silencers are rarely the guilty parties; it is drivers themselves who are mostly to blame. There is nothing clever in a quick take-off, whilst the "zipping" of twist grips when stationary is plain bad manners.

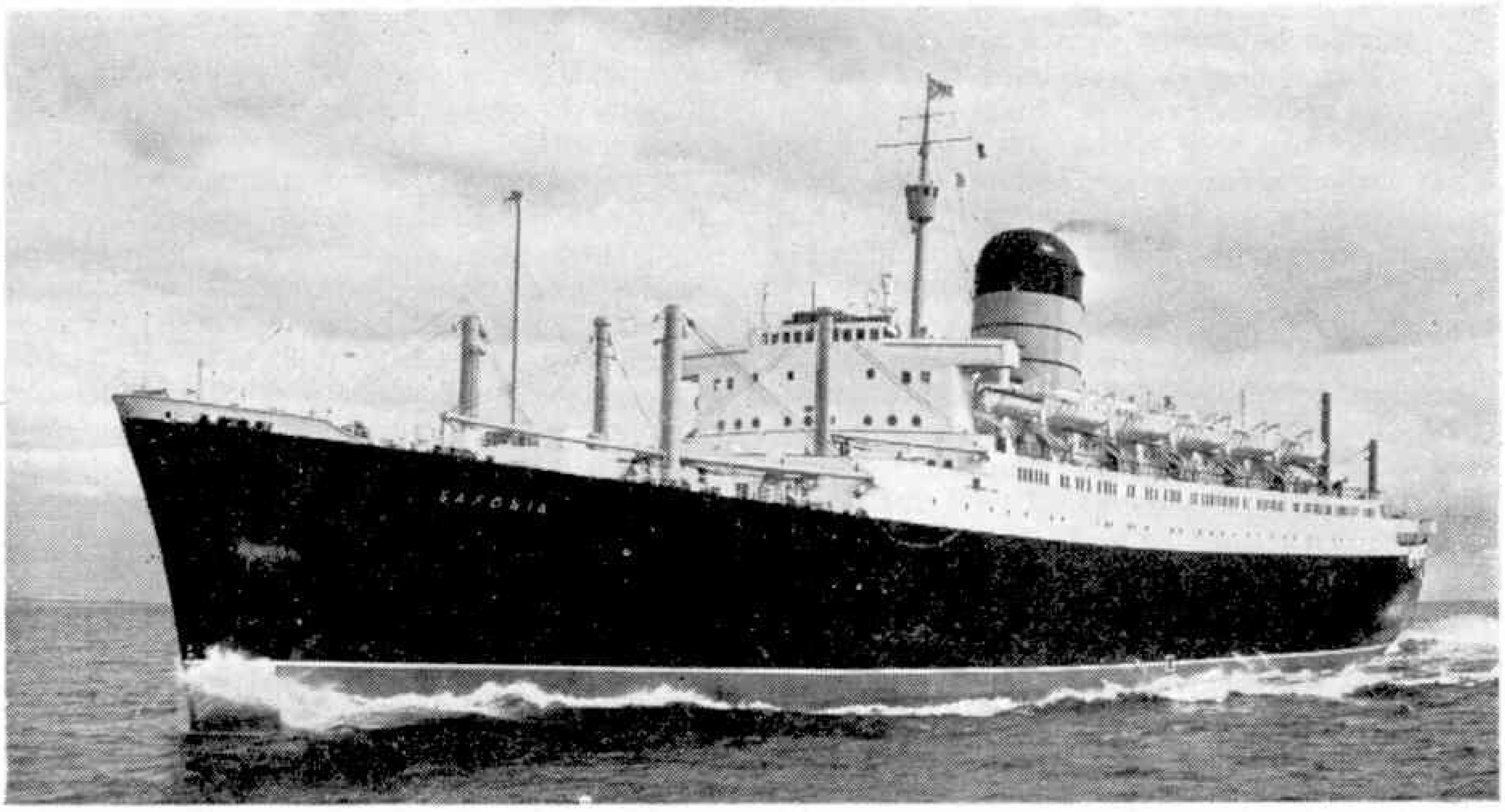
All road users must keep in mind that children should be seen and not hurt. Thank goodness, hoops have gone out of fashion, but watch for balls thrown into the road, and give a wide berth to juvenile cycles and tricycles.



Another scene at the Crystal Palace Training School. Photograph by courtesy of the "Motor Cycle."

Accidents occur through someone doing the wrong thing at the wrong time in the wrong place, and are therefore mostly avoidable. Train yourself to be an expert in the art of evasive action and if you aspire to be regarded as a good citizen—and who does not?—keep on saying to yourself, whenever you use the highways, "I WILL NOT BE RESPONSIBLE FOR ANY ACCIDENT."

Our contributor has been prominent in the motor cycling and cycling movement for a lengthy period. As a member of R.A.C., A.C.U. and Road Safety Committees, chairman of examining panels for the R.A.C./A.C.U. Learner Driver Scheme, lecturer on road topics, and organiser of rallies and competitions, he has a unique knowledge of highway lore. He will be pleased to deal with any individual queries or problems, and letters should be addressed to him c/o The Editor, Meccano Magazine, Binns Road, Liverpool 13.



New Cunarders

Four Liners for the Canadian Service

By W. A. C. Smith

A FRESH chapter in the history of the Cunard Company service between the United Kingdom and Canada, which dates back to 1840, is being opened with the delivery of four 22,000 ton ships from John Brown & Co. (Clydebank) Ltd.

These are the largest Cunarders ever built specially to trade up the St. Lawrence to Montreal. They have an overall length of 608 ft. 3 in. (570 ft. between perpendiculars), a breadth of 80 ft. and a depth of 46 ft. 3 in. Passenger accommodation is approximately 125 first and 800 tourist class, and there is a crew of 456. Below six hatches there is capacity for 300,000 cubic feet of cargo.

The contract for the *Saxonia* and *Ivernia* was announced in December 1951—the centenary year of the shipyard—but for some time the vessels were referred to by their yard numbers of 692 and 693. Their names carry on those of two sisters of 14,000 tons built in 1900. The third ship was ordered in October 1953 and the fourth in March 1955. These are named *Carinthia* and *Sylvania*, after two 5,500 ton vessels built in 1895. A second *Carinthia* appeared in 1925, but was lost during the last war.

In the new liners the curved rake of the stem, the mast abaft the rounded bridge, the terraced decks and the cruiser stern are reminiscent of the 34,000 ton *Caronia*, launched in 1947, but a distinctive feature is the domed top to the 40 ft. aluminium funnel, which is designed to keep smoke clear of the ship. Denny-Brown stabilisers are fitted and there is an anchor set in a stern recess. Twelve lifeboats are carried in gravity davits and bridge equipment includes gyro compass and gyro pilot, echo sounding apparatus of the visual recorder type, direction finding apparatus, radar, Decca navigator, and of course telephonic communication systems with all parts of the ship.

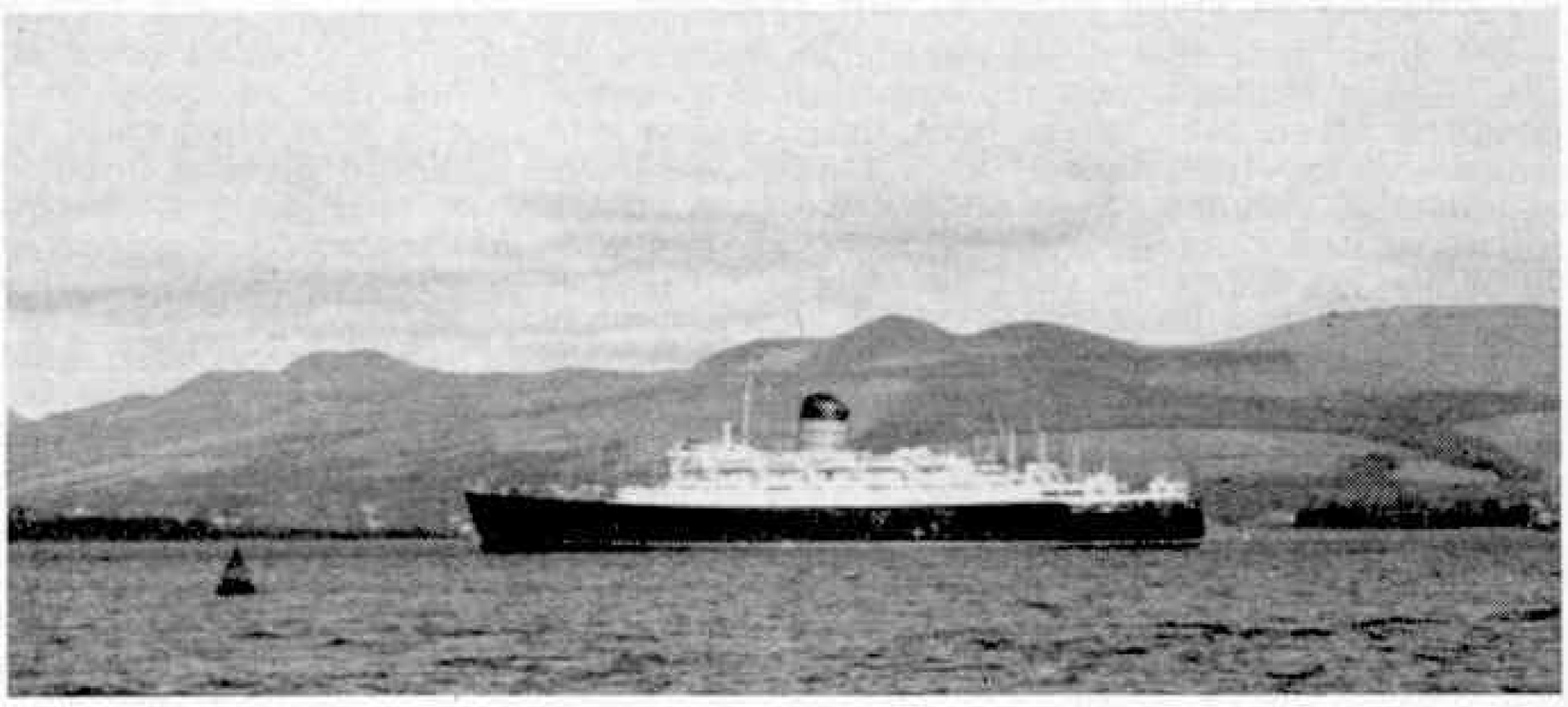
The illustration at the head of the page, reproduced by courtesy of Cunard-White Star Ltd., shows the "Saxonia," the first to be built of four Cunard liners for the service between Great Britain and Canada. She was launched in 1954, and was followed by the "Ivernia" and "Carinthia," launched in 1954 and 1955 respectively. The quartet will be completed by the "Sylvania."

The propelling machinery, also the work of John Brown & Co. Ltd., incorporates the latest improvements in steam turbines and water tube boilers, with a twin screw installation of geared turbines designed for steam at 550 lb. per sq. in. The high and low pressure turbines are coupled to the

propeller shafts through double reduction, double helical gearing, which gives a propeller shaft speed of 135 r.p.m.

In the after end of the main engine room is the power station, which supplies current to 10,000 lamps and 320 electric motors from four generators. All deck and auxiliary engine room machinery is electrically operated.

There is a central fire station, and in addition to automatic sprinklers there are fireproof doors throughout the ship, with carbon dioxide extinguishing gear in the cargo holds.



The "Ivernia" off Greenock while making a call in the Clyde.

The double bottom has eighteen watertight compartments, above which are ten transverse watertight bulkheads. There are nine decks. In passenger accommodation the emphasis is on space and comfort, and in the public rooms, all of which are air conditioned, considerable use has been made in decoration of Canadian symbols, which vary between the individual ships. Across a panel on the main tourist staircase is a huge coloured map of the Dominion.

All first class staterooms, single and double rooms, each with adjoining bath or shower, are on the main deck, with the smoking room on the boat deck looking forward over the bows, while directly below this on the promenade deck is the lounge. Close by are the cocktail bar, library, barber's shop, beauty parlour, children's playroom and the shop. The restaurant has a lift serving five decks. Particularly noteworthy is the cinema theatre, as it extends through three decks.

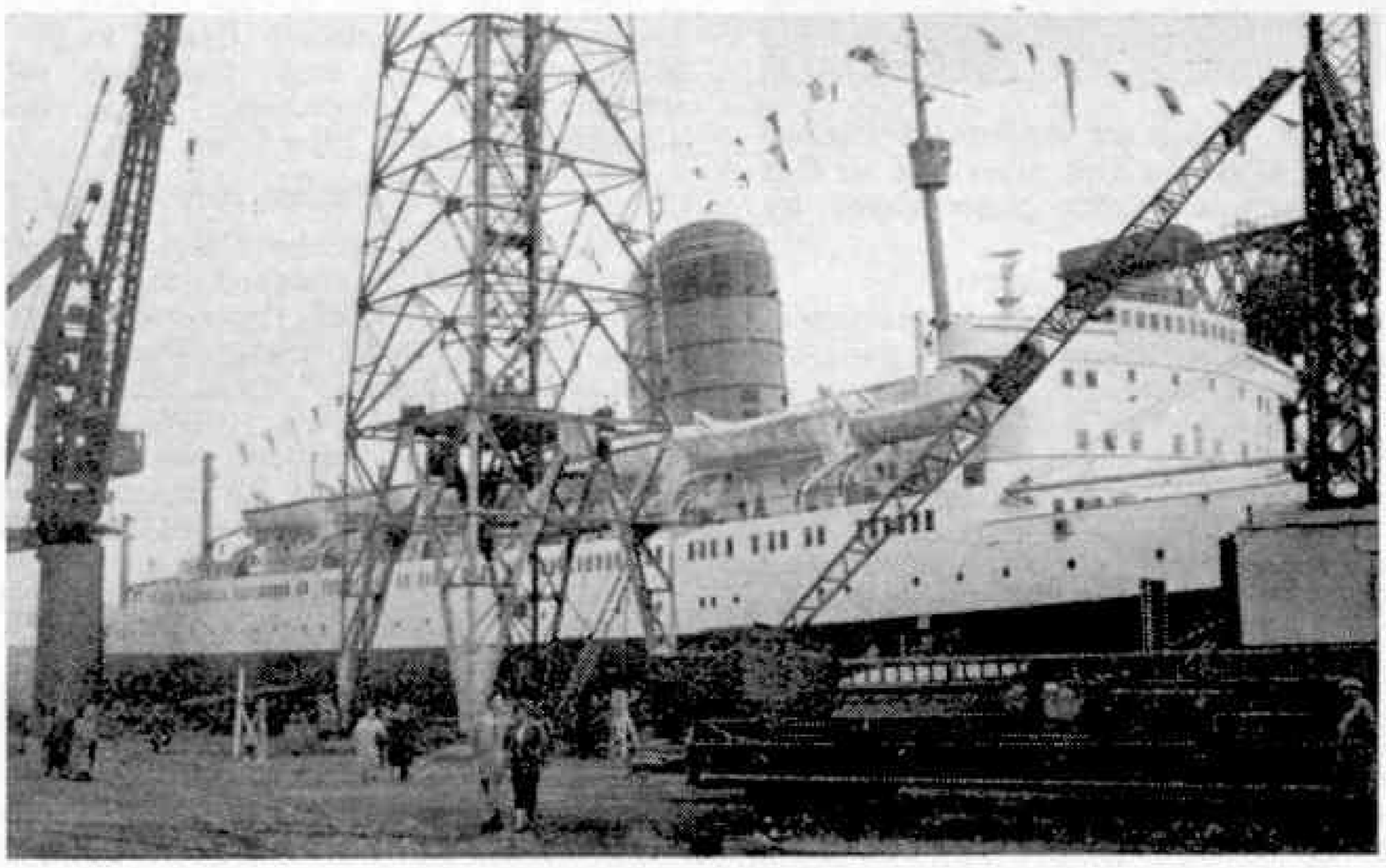
The principal tourist class public rooms are on the promenade deck and are flanked on either side by a broad, glass enclosed promenade. The lounge has a central dome directly over a dance floor, and farther aft is the games deck. Two passenger lifts serve the tourist accommodation and give access to the restaurant, which stretches across the full beam of the ship and seats some 500 passengers. The staterooms are for two and four persons.

I have been privileged to inspect the *Ivernia* and can testify to the high standard of furnishing and decoration—particularly the "Mounties" Bar, "Amber" Lounge, "Floral" Restaurant and "City Cousins" Smoking Room in this ship.

The master's suite is immediately below the navigating bridge and officers are housed in large rooms on both sides of the boat deck, while ratings have special recreation rooms and roomy sleeping quarters.

The *Saxonia* was launched by Lady Churchill on 17th February, 1954, and left the Mersey on 2nd September of the same year on her maiden voyage to Quebec and Montreal.

(*Continued on page 222*)



The "Ivernia" in the fitting out basin at the yard of John Brown and Co. (Clydebank) Ltd.

Railway Notes

By R. A. H. Weight

High Speed Diesel Running, with Contrasts

The B.R main line diesel electric locomotives, of the London Midland, and the rather more powerful Southern types, take charge from time to time of a number of expresses to and from Euston, all being stationed at Camden. Logs of two fine runs on the fastest express from Rugby to Euston, allowed only 79 mins. for 82¼ miles start to stop, are to hand from Mr. Norman Harvey. This train actually starts from Wolverhampton at 1.55 p.m., serving Birmingham and Coventry. The load in each case was 11 coaches, about 375 tons in all.

No. 10000, L.M.R. type, making an unchecked run on the last day of 1955, travelled so fast after a 2-min. late start from Rugby that by the time Willesden Junction in the London suburbs was passed, 77¼ miles had been reeled off in 65½ min. leading after a gentle finish to an arrival in Euston almost 3 min. early, in 74¼ min. overall! Along 34 miles of easy grading between Weedon and Cheddington 79 m.p.h. was averaged, with a maximum of 85.

This performance was similar to some of the best recorded in ordinary service by Royal Scot or Pacific steam engines and faster than any I have recorded personally along that route.

One of the accompanying illustrations shows the locomotive and part of the train after arrival at Euston, being taken as a "night photograph." Interesting contrast is afforded by the next picture, taken at the same platform some 16 years earlier, showing an ex-L.N.W.R. Prince of Wales class inside-cylinder 4–6–0 of more modest capacity after hauling a slow train such as most of the remaining locomotives of this design were by then operating. About another 12 years earlier than that I travelled behind one in a heavy summer express right through from Llandudno to London when, owing to delays and extra stops, the fireman looked almost as exhausted as the coal supplies on the tender!

The other up Rugby-Euston express run with Southern type diesel No. 10202, kept time exactly, including a signal check and a track repair slowing on the rise to Tring, so that although the average speed was not so high it was a fine lively effort.

L.M.R. Diesel Electric Locomotive No. 10000 on arrival at Euston with an express from Wolverhampton after the run described on this page. The illustrations this month are all from photographs by R. F. Roberts.

The Longest Non-Stop Run

The London office of the French Railways points out that, as mentioned in these notes some time ago, the electrically operated *Sud Express*, bound for the Spanish Frontier, is scheduled to run without a stop daily throughout the year from Paris to Bordeaux. Its present very fast timing allows only 299 min. for the distance of 361 miles, representing an average speed of 72 m.p.h. with a 10-coach train weighing 480 tons, which is a splendid achievement. When the summer British *Elizabethan* is not operating, this is the longest regular non-stop run in the world.

British Transport Maritime Developments

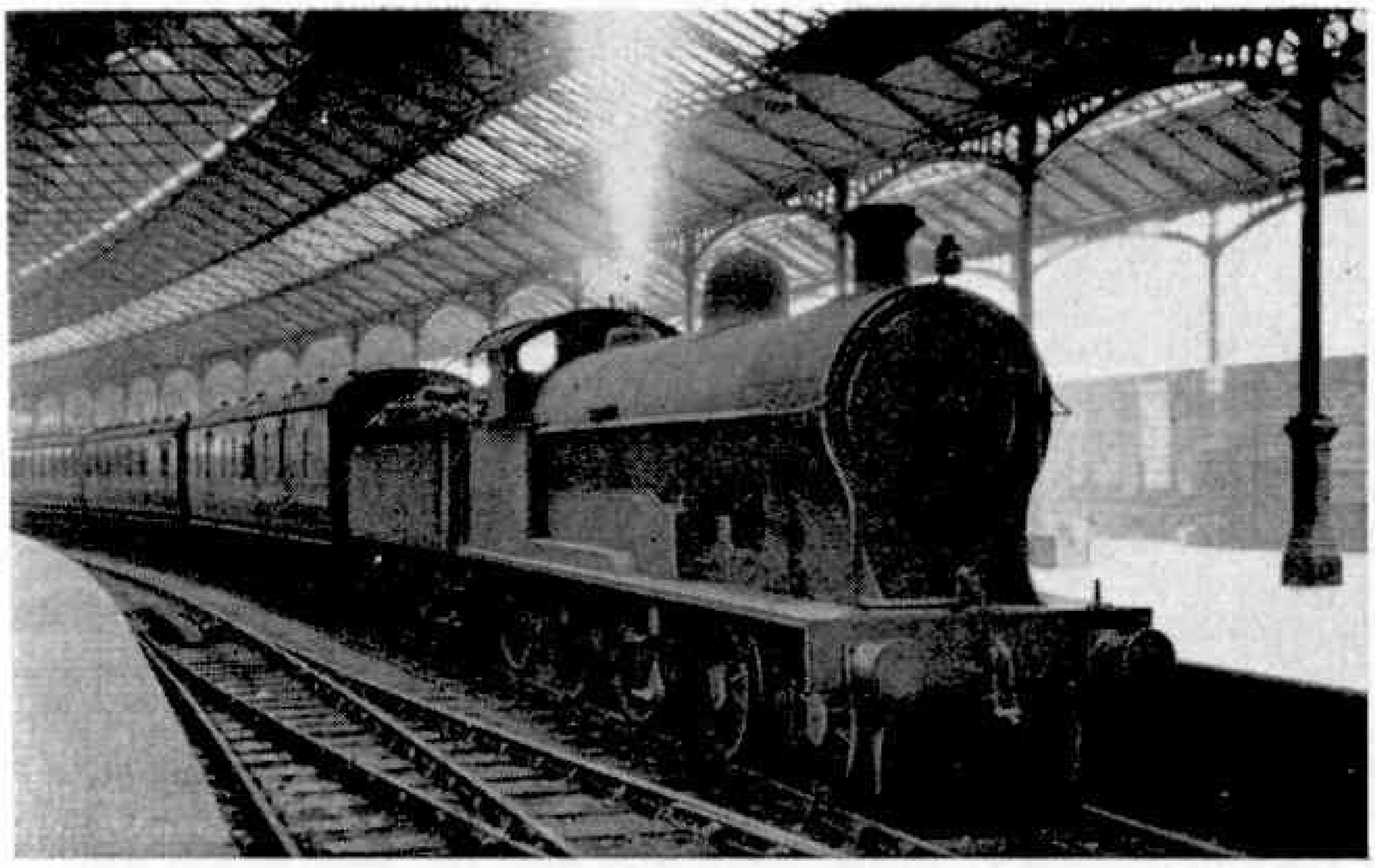
Many of the former British railway companies owned considerable fleets of cross channel or coastal vessels, including fine passenger ships, the equivalent of small liners, operating regular services to France, the Channel Islands, Ireland and elsewhere. Two handsome, 5,000 ton, turbine oil-fired steamships are under construction at Belfast to operate the popular night run between that city and Heysham as part of the London Midland *Ulster Express* service, with accommodation for 1,800 passengers and a fine range of equipment designed for maximum of comfort, speed and safety. Continuing a naming tradition, the two now fitting out will be known as *Duke of Lancaster* and *Duke of Argyll*. A third liner of this type to follow will be well equipped for the carriage of general cargo, motor cars, mails, newspapers and baggage, as her predecessors were.

Among the important dock installations developed under railway auspices, and now controlled by the B.T.C., are those known as the Humber Ports, of which Hull is the principal and most extensive. There, as well as at Immingham and Goole, improvements and constructional works are being put in hand at a total cost of over £2,000,000. They include new quays and sheds, repairing war damage on a large scale at one of our busiest fish harbours—St. Andrews Dock, Hull—additional gear and buildings to accommodate passengers, cargo, oil tankers and their pipe lines, etc.

Eastern Region News

At Doncaster Works class 5 4–6–0s numbered 73122 upward are being completed fairly rapidly as part of the series of 10 begun with No. 73120. A good many Pacifics of various classes have been in hand there for repair and overhaul during winter months, when express passenger traffic is lighter. The shops are always fully occupied with such work, however. Locomotives of many types come there for all kinds of mechanical attention and for repainting when necessary.

A little over a year ago I described an interesting journey behind an E4 2–4–0 along the Cambridge-Colchester cross-country line, largely single track. The actual train is depicted in the accompanying photograph, with a branch train headed by another ex-Great Eastern veteran locomotive of the J15 0–6–0 class. There has been a number of withdrawals of E4s lately; the last active 2-4-0s in Britain.



A scene at Euston in 1939, at the same platform as the view of No. 10000 opposite. The engine is a former L.N.W.R. "Prince of Wales" 4-6-0 No. 25673.

A considerable exchange of 2–8–0s lately took place between Colwick and Mexborough sheds. The latter received 18 04 type and sent a similar number of the W.D. 90000 class to the Nottingham depot, which also exchanged two similarly with Doncaster shed. Immingham depot received some J50 0–6–0 shunting tanks and was listed to have transferred diesel-electric shunters Nos. 13158–61 to King's Cross.

Locomotive Miscellany

New class 5MT 4–6–0s allocated to Scottish sheds include Nos. 73108–9, 65A, Eastfield, Glasgow; No. 73120, 63A, Perth; and No. 73121, 67A, Corkerhill, Glasgow.

Another new 2–10–0 for 36A, Doncaster depot, was No. 92072. Nos. 3401-3 went into W.R. 0–6–0T stock.

Turning from steam to diesel shunting engine development, latest 0–6–0s having electric drive include Nos. 13232–4 built at Darlington for duty at 53A, Hull, Dairycoates; No. 13197 to 66A, Polmadie, Glasgow; and No. 13206 to 66C, Hamilton. Diesel-mechanical engines constructed by the Vulcan Foundry Ltd., numbered 11149–51, are shedded at 51C, West Hartlepool, and 200 h.p. diesel-hydraulic No. 11706 at 64A, St. Margarets, Edinburgh.

Some of the S.R. Pacifics are being partially rebuilt at Eastleigh, commencing with No. 35018, *British India Line*, seen in modified form at the end of February. It is hoped to continue a high standard of performance while at the same time securing reduced fuel and maintenance costs. Three sets of normal Walschaerts gear are fitted instead of the internal chain drive arrangement; the whole of the external casing has been removed and the appearance somewhat resembles the class 8 B.R. 4–6–2, *Duke of Gloucester*.

As many of the W.R. King class 4–6–0s were withdrawn temporarily from service early this year for attention in works, several L.M.R. 4–6–2s of both Princess and Duchess classes were loaned for express service to and from Paddington.

Third Class will be Second!

On many Continental trains, as was the case here years ago, three classes of travel have been provided, but from June next the general designation will be first and second only and the same arrangement will apply on British main line railways in order to conform and facilitate through bookings. Fares for travel in the newly designated second class accommodation here, and also for one-class-only trains, will be the same as would otherwise have been charged for third class travel. As now, only first class compartments or coaches will bear numbers and labels on the outside to indicate the distinctive accommodation. It will merely be a change of name.

In recent years second class carriages, additional to the usual first and third, have been run only on certain boat expresses by the E.R. and S.R. to and from United Kingdom ports to enable uniform through bookings to be maintained with Continental systems. Such separate provision will no longer be necessary.

Another Named Train

To commemorate the recent Government announcement that Cardiff is recognised as the Capital of Wales, the Western Region has bestowed the name *Capitals United Express* upon two of their scheduled fast trains connecting Cardiff, and other important S. Wales stations, with London. The time of departure from Paddington is 3.55 p.m. and from Cardiff, 8.0 a.m

Diesel Success

During the first six days of running on the L.M.R. Bury-Bacup line, Lancs., lightweight diesel units attracted nearly 200 per cent. more custom than the fewer steam trains during the same period in 1955.

A pleasant shot at Long Melford in October last. A former G.E. 2-4-0 No. 62790 is leaving for Colchester, while 0-6-0 No. 65391 heads the Bury St. Edmunds train on the left.

Shakespeare and Stratford

By Leslie E. Wells

BRITAIN'S chronic dollar problem would certainly be worse than it is were it not for the help given by William Shakespeare in drawing American tourists to Britain, and most particularly to Stratford-Upon-Avon.

The greatest of all the English-speaking poets has become big business, luring to the place of his birth over half a million people each year. American visitors spend some three to four million dollars annually in Stratford, and overseas visitors spend something like three times that amount, thus providing the British exchequer with badly needed foreign currency.

Yet nobody knows for certain just who this Shakespeare was, and there are people who even claim that he did not write any of the plays that were first presented under his name, and which have been accepted as his by most people ever since.

Generally his name is spelled Shakespeare, but it might be Shakespere, Shagsper, Shaxpeare or Shakspeare. His parentage is in doubt, but it is thought that his father was John Shakespeare, who settled in Stratford-on-Avon about the middle of the sixteenth century. Nobody can be sure what John Shakespeare did. He might have been a butcher, or he might have been a wool merchant, and yet again he might have been a dealer in barley and timber. In any case, he seems to have been a man of some substance, for he bought two houses in Stratford, one of which has been known for years as the Woolshop.

Portrait of Shakespeare, from a painting attributed to Richard Burbage or John Taylor.

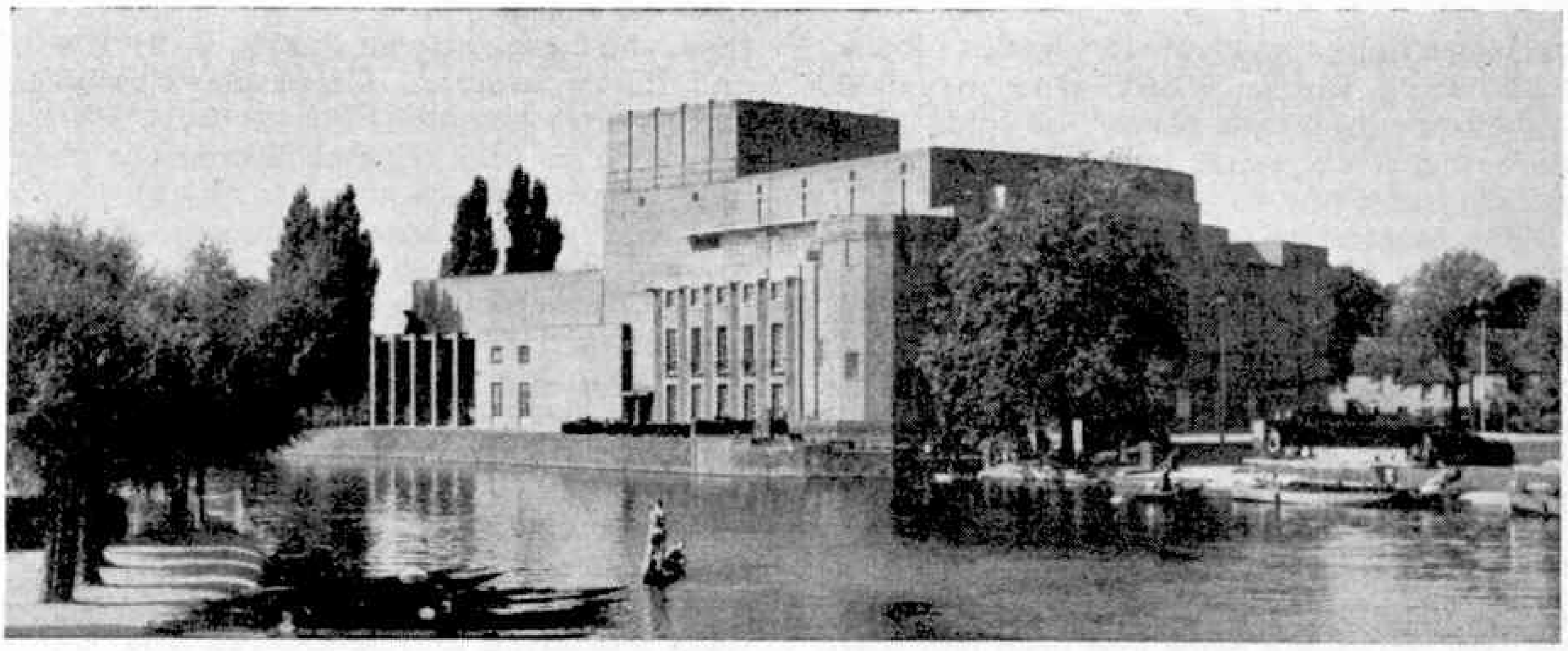
It is this John Shakespeare and his wife, who before her marriage was called Mary Arden, to whom, it is believed, William Shakespeare was born on 23rd April, 1564. But no date of the birth has ever been found in the usual records, although a boy was baptized in Stratford on 26th April, 1564, his Christian name definitely being William, while his surname was Shakespeare, or maybe Shaxper or something very similar.

Although no one can be quite sure when William Shakespeare was born, everyone agrees that he died on 23rd April, 1616, which means that 23rd April marks the date of his birth and also the date of his death, the two events being separated by 52 years.

Nothing at all is known about his boyhood, although it is assumed that he was educated at Stratford Grammar School. It is known that he married at the age of eighteen, which was not a very early age in those days, and that his bride was a girl some eight years older than himself, who lived in the neighbouring hamlet of Shottery, and whose name was Anne Hathaway.

Their meeting was a romantic one, for he first saw Anne when she was in difficulties, having been trapped in some rushes while she was paddling. William waded into the water, picked her up and carried her to safety. But whether he really wanted to marry Anne is doubtful, for there is evidence to indicate that there were others he would have preferred. It is also thought that his marriage was not as happy as it might have been, and there are some who even say that he first went to London in order to be out of Anne's way.

Anne Hathaway's cottage was purchased for the nation as recently as 1892, and right until 1899 it was occupied by a descendant of the Hathaway family. It is one of the



The Shakespeare Memorial Theatre on the banks of the Avon, opened in 1932.

best known and most often visited of the "sights."

Anne seems to have played a small part in Shakespeare's life, for he spent much of his time in London until the year 1610, when, it appears, he settled down in Stratford once again, at what is called New Place. This house, built by Sir Hugh Clopton, had been bought by Shakespeare in 1597. He seems to have done well in London as owner of the Globe Theatre and part owner of the Blackfriars Theatre, for in 1602 he not only bought a cottage in Chapel Lane, Stratford, to which was attached a quarter of an acre of garden, but at the same time he bought 127 acres of farmland.

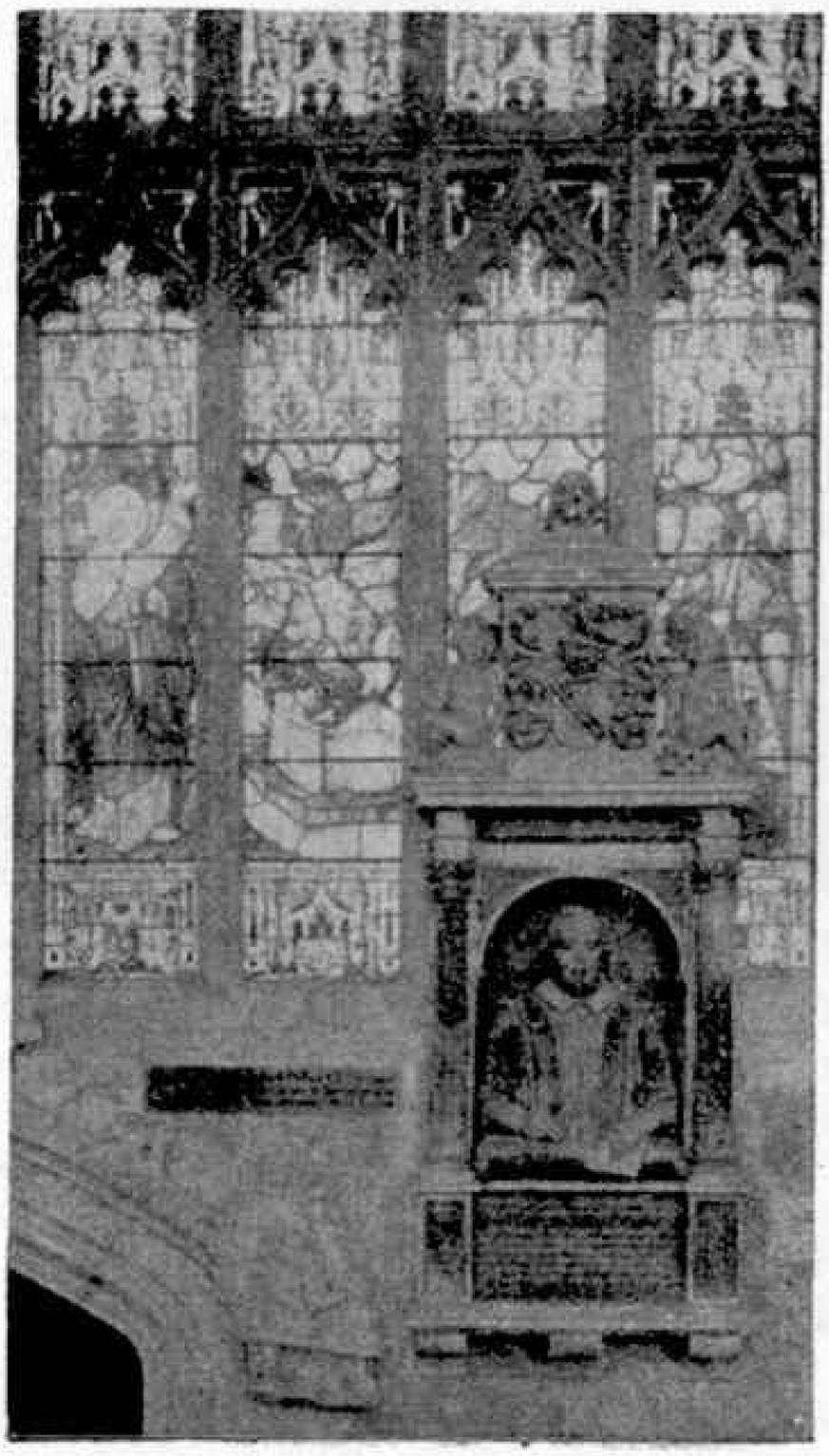
His death was an untimely one, and seems to have followed upon a drinking bout with the poet Michael Drayton, and with the poet and dramatist, Ben Jonson. According to the parson who became Vicar of Stratford in 1662, all three "itt seems drank too hard, for Shakespeare died of a feavour there contracted."

No serious attempt was made to preserve the buildings that Shakespeare had known and lived in until over two hundred years after his death. Then in 1876, the site of New Place was bought by public subscription and handed over to the Shakespeare Birthplace Trustees.

The first Shakespeare festival of any importance was a Jubilee promoted by the famous actor, David Garrick, in 1769. This was a very gay affair, and included salvos from cannon, public breakfasts, fireworks and even horse-racing. In fact, there was everything—except a performance of one of Shakespeare's plays.

This kind of celebration was held each year for over a century, making nobody any money, and it seemed that Stratford was destined to remain a large village where Shakespeare was born. And so it might have been had it not been for Charles Edward Flower, a businessman with a great deal of understanding and foresight. And it was this man who was to make Stratford host to the entire world.

By 1870 Britain was so much aware of the greatness of Shakespeare that many people were talking about erecting a suitable monument to his name. Quite a lot of people indeed had been talking about such a monument for some time, but nothing whatever



The memorial of the poet on the north wall of Trinity Church overlooks his tomb in the chancel.

had been done to provide it. Charles Flower, however, knew what was needed. "Shakespeare means plays," he said. "The monument we want is a theatre where people can come to see those plays."

The suggestion was met with scornful laughter. The very idea of a theatre in a village the size of Stratford seemed absurd, and even the burgesses, who were proud of their Stratford, thought it ridiculous. As for the rest of the country, they thought it the height of folly and stupidity, and they said so.

London was most contemptuous of all. The great city had for many years talked about building a Shakespeare theatre of its own, but not a brick had been laid then, and not a brick has been laid by the Londoners to this day. What chance, then, had Stratford with its mere handful of inhabitants of building a theatre worthy of the immortal Shakespeare?

Charles Flower, happily, was not easily daunted, and he roared back at the Londoners and the rest of the country: "We've waited nearly three hundred years for the Somebodies to do something; now we'll show what the Nobodies can do."

His first step was to give two acres of land on the bank of the River Avon as a site for the theatre. Then he scoured England to raise the necessary money for the building. In spite of his zeal and determination, he raised only £1,000 towards the cost of a theatre, which was fixed at £20,000. As others refused to find the necessary money, Flower supplied it himself. He was married, but without children, and so he and his wife bequeathed much of their personal property to the Shakespeare Memorial Association, which Flower himself had founded to run the theatre.

The Shakespeare Memorial Theatre was opened in April 1879, with a performance of *Much Ado About Nothing*. The play was presented by a London company, among them the famous Helen Faucit, Lady Martin and Barry Sullivan. Other plays included in this first genuine Festival were *Hamlet* and *As You Like It*. But neither the plays nor the players attracted sufficient people and the season was a financial failure. Even during Festival Week itself many of the 850 seats were not taken.

It seemed that the Londoners had been right, and that Charles Flower had made a venture destined to failure. It was then, however, that he heard of a young actor-manager named Frank R. Benson. Benson had one supreme ambition. He wanted desperately to play at the Shakespeare Memorial Theatre. At the time his players were appearing at Leamington Spa, but a few miles from Stratford. Without losing a moment, Charles Flower drove over to see Benson's production of *Macbeth*.

Flower was so impressed by what he saw that he engaged Frank Benson and his company to play at the Memorial Theatre. It was an act of great insight. For Frank R. Benson made both the theatre and Stratford itself world famous, and he reigned there for thirty-five years. It became the custom for the residents to greet "F.R.B." and his players at the station when the season began, and to conduct them like kings and queens to the theatre. The whole sporting and social life of the town revolved round the company. Cricket, hockey, tennis, boating and bathing became as much a part of the Shakespeare Festival Season as the nightly plays.

The Shakespeare memorial in Stratford-on-Avon.

When Charles Flower died in 1882, having devoted 20 years to the fulfilment of his dream, his brother Edgar carried on the work until he in turn died in 1903. Happily, Edgar Flower had ten sons, and they accepted the task of attending to the needs and affairs of the theatre.

In 1926, on a spring afternoon, the Shakespeare Memorial Theatre was completely destroyed by fire. Within a few hours the building, which Charles Flower

had brought into being at such great effort and personal cost, no longer existed. Lovers of Shakespeare throughout the world lamented the loss of the theatre, but there were those who saw that what seemed like a disaster might well prove a blessing. Sir Archibald Flower, one of Edgar's sons, was one of them. "It's just as well," he said. "It's time for a bigger theatre."

George Bernard Shaw also saw that good might come out of what seemed to many to be only evil. He sent a telegram to Mr. W. Bridges-Adams, the young producer who had succeeded Frank Benson, in which he said: "You must be delighted."

George Bernard Shaw was not being funny. The truth was that the Memorial Theatre was more ornate than useful. It had served its day and generation well, but something much bigger and better was needed.

Sir Archibald Flower's task of raising money for the new theatre was by no means an easy one. The world was suffering from economic ills, and he needed not £20,000, like his Uncle Charles, but something like £250,000. In an effort to make sure of all the money he needed, Sir Archibald and his wife paid several visits to America, telling the story of the old Memorial Theatre and what he hoped for the new one. Contributions made through the American Shakespeare Foundation amounted to over £120,000, while donations from other parts of the world amounted to some £200,000.

Shakespeare's house.

Sir Archibald set about building the finest theatre in Britain on the banks of the River Avon. When the building was completed there was enough money to spare to endow the theatre handsomely. Its designer was Elizabeth Scott, who won the right by presenting the winning design in an international competition.

The theatre was opened by the then Prince of Wales on 23rd April, 1932, which is both St. George's Day and Shakespeare's birthday. The theatre is filled to capacity throughout the whole of the season, taking an average of £3,000 a week. Anthony Quayle, the director of the theatre, says that their only problem is to cope with all the people who want seats. Even with costs running at £2,000 a week, the theatre made a profit of £25,000 last year.

It is, indeed, a fitting memorial to a man whose plays are now resulting in some of the finest pictures. In Stratford-on-Avon the bard has become big business, but he has also become big entertainment. In fact, it is in Stratford that William Shakespeare has really come into his own.

The "Deltic"—(*Continued from page 203*)

cab at each end, each cab having the characteristic nose end in front of it. The two power units are in the central compartment, with an automatic oil-fired boiler in the centre of the locomotive between them, which provides heat for the train hauled by the engine. Between the power units there is also a storage battery, principally used for starting the engine.

For normal work in railway service the two power units of the locomotive will run together. They are controlled simultaneously, and the engine turning power or torque is automatically adjusted to suit the load and speed. Changeover switches are provided so that either power unit can drive all six traction motors, so that with only one power unit in operation the tractive effort of the locomotive is not affected, but it will then operate at approximately half the maximum speed.

Air News

By John W. R. Taylor

A Piasecki helicopter, after taking off from the flight deck of the Royal Canadian Navy's Arctic patrol vessel HMCS "Labrador," flies over an ice-infested region of the Canadian Arctic with a cargo net containing a barrel of oil. Canadian National Defence photograph.

Helicopters in the Arctic

Three helicopters carried by the Royal Canadian Navy's Arctic patrol vessel, HMCS *Labrador*, have played a big part in survey work connected with the construction of the joint U.S.-Canadian DEW (Distant Early Warning) Line of radar defence posts. Their primary duties were to find paths for the *Labrador* and merchant ships through icefields, to measure the depth of water with hand lead-lines to prevent the vessels going aground on uncharted rocks and shoals, and to carry parties of surveyors to and fro. But they did many other jobs, from hunting for, and finding, a missing U.S. soldier, to flying ashore a complete navigational radio station plus the personnel to erect and operate it.

This last job involved transporting tents and shelters, a tide gauge and the timber required to build a crib for it, generators, mast, equipment, food and fuel. The total lift amounted to 28,640 lb. and was completed in under 20 flying hours by the two Bell HTL-4s and single Piasecki HUP. A similar station was set up three days later at another site, where tidal conditions and treacherous shoals might have prevented the work being done by boat. On yet another occasion, the HUP lifted a series of daymark beacons, each weighing 700 lb. and standing 15 ft. high, from the deck of the *Labrador* and set them down in their exact positions ashore.

Channel Islands Air Ferry

Yet another air ferry service has been opened by Silver City Airways, this time on the 120-mile route between Eastleigh Airport, Southampton, and the Channel Islands.

The main object of the new ferry is to deliver perishable food, cars and manufactured goods to Guernsey and to airlift cut flowers and market garden produce back to the mainland. Government permission has also been given for carrying tourists' vehicles and up to six passengers a day.

Silver City now operate seven regular ferry services: from Ferryfield to Ostend, Calais and Le Touquet, from Stranraer to Belfast, and from Southampton to Cherbourg, Deauville and Guernsey. Last year they carried more than 57,000 vehicles and 166,000 passengers over the English Channel and Irish Sea. By lifting a total of 72,000 tons of cargo, they became the busiest air freight carriers in the world.

The Fokker Friendship

During the 1920s and '30s the Dutch Fokker Company built some of the world's finest air liners. Now they hope to get back into the business with the F.27 Friendship, illustrated below. It made its first flight on 24th November last, and initial reports say that its performance is as fine as its appearance.

Intended to replace the veteran Dakota on short-range services, the Friendship is powered by two 1,780 e.h.p. Rolls-Royce R.Da.6 Dart turboprops, which enable it to operate on 300-mile stage lengths at a cruising speed of 203 m.p.h. with full payload. Production aircraft will have a 3 ft. longer fuselage forward of the wings, so that they can carry 32 passengers, plus 282 cu. ft. of luggage and cargo in the freight hold immediately behind the flight deck.

Fokker say that several airlines plan to re-equip with the Friendship, and it will also be built under licence in the United States by Fairchild. Deliveries will begin towards the end of next year.

Last Rolls-Royce Piston Engine

Rolls-Royce's Derby works have built their last aircraft piston engine, a Griffon for a South African Air Force Shackleton patrol-bomber. It was the 51,169th piston engine built there since Rolls-Royce

The Fokker F.27 "Friendship" transport referred to on this page.

The new Lockheed YC-121F, the first of two such turboprop Super Constellations for the U.S. Air Force.

delivered their first aero engine in December 1915. The others included the "R" engines fitted in the Supermarine seaplanes which won the Schneider Trophy for Britain in 1931 and the Merlins that powered the famous Hurricanes, Spitfires and Lancasters of World War II.

Production of piston engines has been reduced steadily since the first Derby-built turbojet was tested on 17th November, 1945. Now their place has been taken by the Avon turbojet, Dart turboprop and other engines that will maintain the tradition of Rolls-Royce leadership in the air, as on the roads.

Fastest Propeller-driven Transport

Lockheed claim that the YC-121F Super Constellation illustrated above is the fastest propeller-driven transport in the air. Built for the U.S.A.F., it has four 5,700 h.p. Pratt and Whitney T34 turboprops, which enable it to carry 106 passengers or 16 tons of cargo at cruising speeds up to 440 m.p.h. at 25,000 ft.

When fully loaded with 8,750 gall. of fuel, including two 600-gall. wingtip tanks, the YC-121F weighs nearly 67 tons and could fly 3,000 miles with a 10-ton load, including full fuel reserves. The U.S.A.F. will have two for service testing. Two similar aircraft, designated R7V-2, will be operated by the U S. Navy.

Atomic-Powered Aircraft

It is reported from America that the first atomic-powered aircraft has been tested by the U.S.A.F. in flights over Texas and New Mexico. No details are given, except that it is a modified B-36 bomber, with an atomic reactor mounted in its nose.

Apparently no attempt has been made to derive power from the reactor during flight; and the *Daily Mail* claimed recently that Britain has a similar reactor small enough to be carried in an aircraft. Named *Zeus* (Zero Energy Uranium System) it is said to be the size of a dustbin and to have been developed at Harwell to discover the minimum amount of screening necessary to cut out dangerous radiation.

Silencers for Jet Engines

Big problem confronting builders and operators of jet-powered air liners is to reduce engine noise, especially during ground runs and take-off. Several cities in America have banned jet-liners from their airports until the problem has been solved.

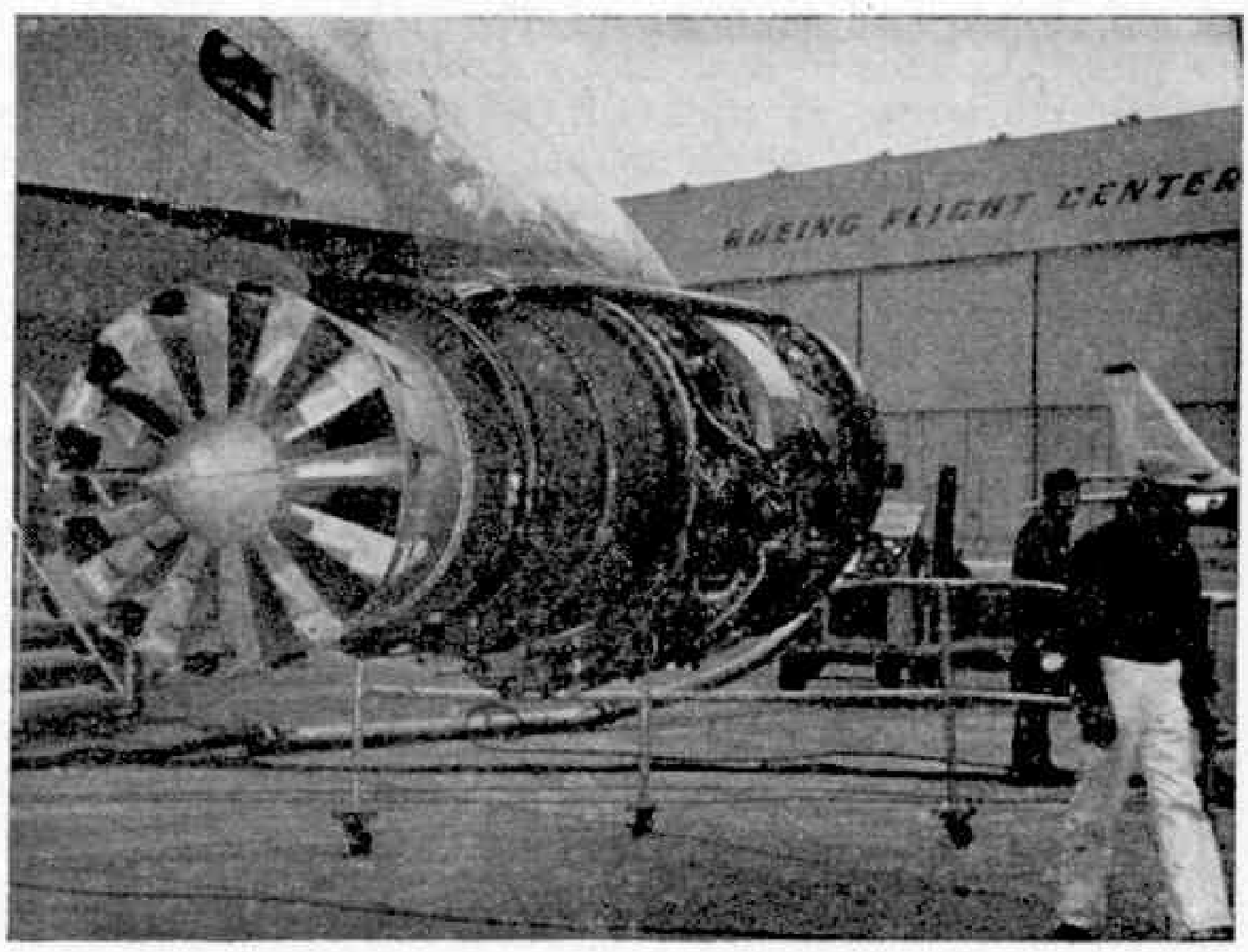
Fortunately, great progress has already been made, especially by Rolls-Royce and Boeing, and the decision of these two great companies to work together on the development of silencers should bring a speedy end of the ban.

Boeing tested seven full-size noise suppressors and more than 40 small-scale silencers in a recent three-month programme. One of them is shown in the illustration below, fitted to a J57 turbojet on the Boeing 707 jet-liner prototype for high-speed taxying tests. Viewed from the rear, it looks like a huge metal flower with 12 squared-off petals. These are the ducts through which the engine exhaust is led, and it is already certain that such devices can offer a big reduction in noise at small cost in performance; an encouraging prospect.

London-Paris Direct Service

If all goes well, we may not have to wait for large passenger-carrying helicopters to be produced before we can fly direct from London to Paris, cutting out the time-wasting coach journeys between city centre and airport.

Scottish Airlines, a subsidiary of Scottish Aviation, have applied for permission to operate a service with 16-seat Twin Pioneer air liners from a landing field situated only a few miles from the centre of London, to Issy Airfield, only five minutes from the Eiffel Tower. The Twin Pioneer's short take-off and landing runs enable it to fly easily from fields that would be too small for other air liners; yet it offers the reasonable cruising speed of 150 m.p.h. over a 500-mile range with full load. Its use on the proposed service would cut the London-Paris overall journey time by 1½ hours. Moreover, Scottish Aviation are reported to be designing a 40-passenger, four-turboprop transport with the same remarkable quick take-off ability, but higher cruising speed.



One of the Pratt and Whitney J57 turbojet engines of the prototype Boeing 707 jet transport is here seen fitted experimentally with a noise suppressor. Illustration by courtesy of Boeing Airplane Co., U.S.A.

Night Mail

The Work of the Travelling Post Offices

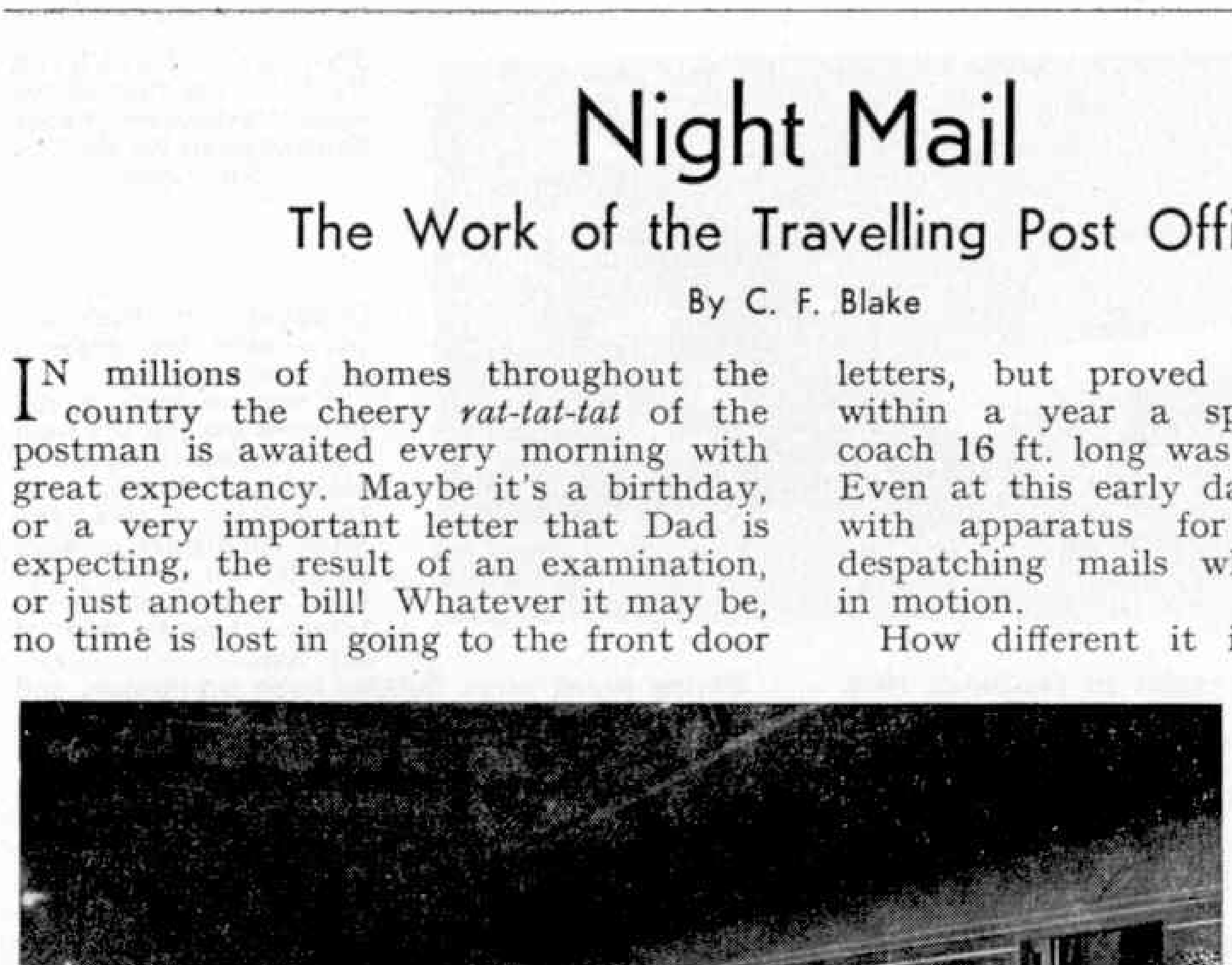
By C. F. Blake

IN millions of homes throughout the country the cheery *rat-tat-tat* of the postman is awaited every morning with great expectancy. Maybe it's a birthday, or a very important letter that Dad is expecting, the result of an examination, or just another bill! Whatever it may be, no time is lost in going to the front door to collect the mail. It has become a part of our lives, and is more or less taken for granted. This in itself is a compliment to the efficiency of the G.P.O. and its vast organisation, which makes ours the finest postal system in the world.

All of you are familiar with the postman collecting and delivering mail, and with the mail vans speeding along the roads. But during the hours of darkness most vital parts of the Post Office machinery are working at full pressure. These are the night mails or, to give them their official title, the Travelling Post Offices, known familiarly as the T.P.Os.

Just over one hundred and eighteen years ago, on 6th January 1838, the first T.P.O. ran along the Grand Junction Railway from Birmingham to Liverpool. It was just a converted horse box, with a few wooden shelves for the sorting of letters, but proved so successful that within a year a specially constructed coach 16 ft. long was put into operation. Even at this early date it was equipped with apparatus for picking up and despatching mails while the train was in motion.

How different it is today. Fifty of these T.P.Os, with hundreds of letter sorters aboard, run every night throughout the length and breadth of the land. They travel nearly 3 million miles every year, and the men who serve on them collect, sort and despatch during that time about 488 million postal items—mostly letters.

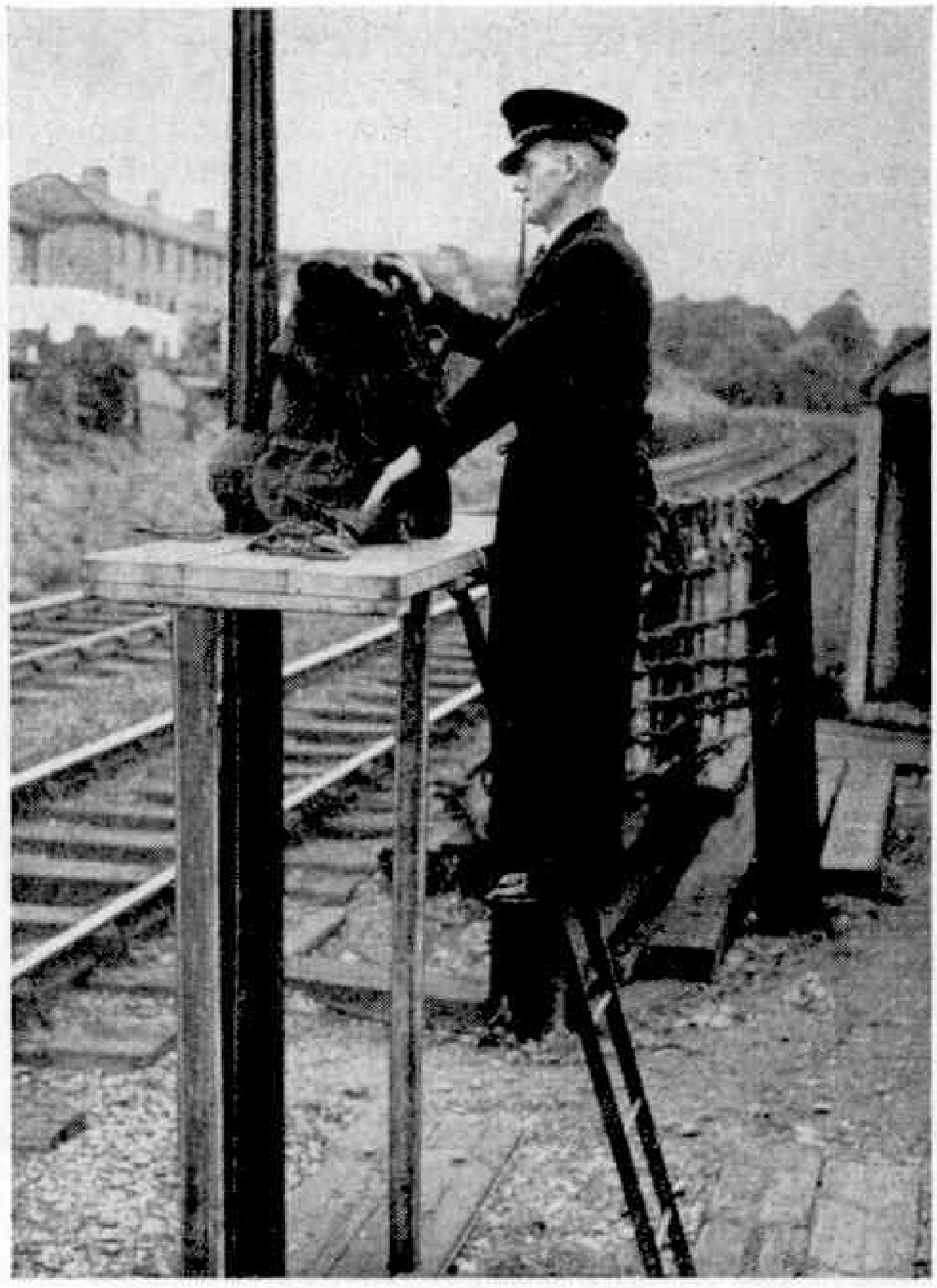


Loading mail into the Down Special Travelling Post Office at Crewe.

Whenever the story of the Night Mail is told, most people are usually astonished and thrilled to hear that, while they are asleep, so many mail trains are speeding through the sleeping countryside, roaring through almost deserted stations, and slowly puffing their way into the last stations on their routes at the dawn of day.

There are two kinds of T.P.O.—the smaller kind of one or more sorting coaches attached to an express train, and the bigger one made up entirely of sorting coaches. There are up to seven of these, plus a number of vans for bags of parcels and letters which do not have to be sorted on the train. They carry no passengers; on them are just the engine drivers and firemen, guards and the men who sort the mail.

The *Big Four* T.P.Os. are very fast.

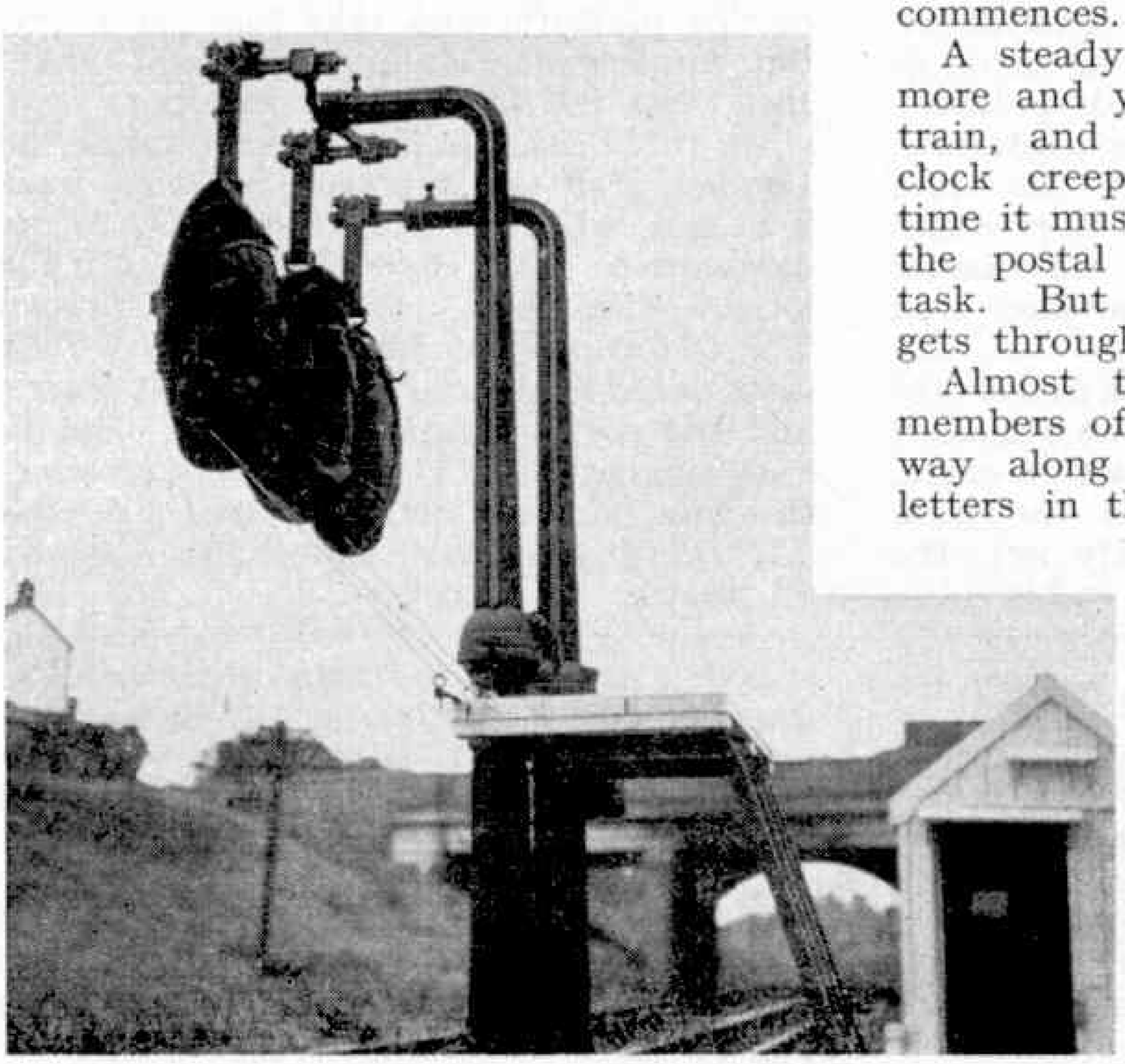


The postman climbs to the platform on the lineside standard with a pouch to be collected by the travelling post office.

Two of them run, one each way, between Euston Station, London, and Aberdeen, Scotland. They are called the *Up and Down Special T.P.Os.*, but are better known as the *West Coast Postals*. The other two run both ways between Paddington, London, and Penzance, Cornwall, and they are called the *Great Western Up and Down T.P.Os.*

The *Big Four* travel over 1,700 miles every night, and newspaper reporters who travel on them sometimes, to see how they work, refer to them as *Ghost Trains*. By the way there is a stage play called *The Ghost Train*, and this carries no passengers either!

Perhaps some of you who live in London have seen the gleaming crimson and gold coaches of the Down Special being gently backed into Euston Station well over an hour before she is due to start on her all night run to Aberdeen. What a lovely sight she is, this largest T.P.O. in the world! The sorters, already on the platform, go aboard at once and start to deal with the hundreds of mail bags that have already arrived by van and train from London sorting offices and the neighbouring counties. Not a moment is lost. Bags are opened and the letters taken to the appropriate sorting positions on the train, where the high speed and accurate sorting of between 50 and 60 letters a minute commences.



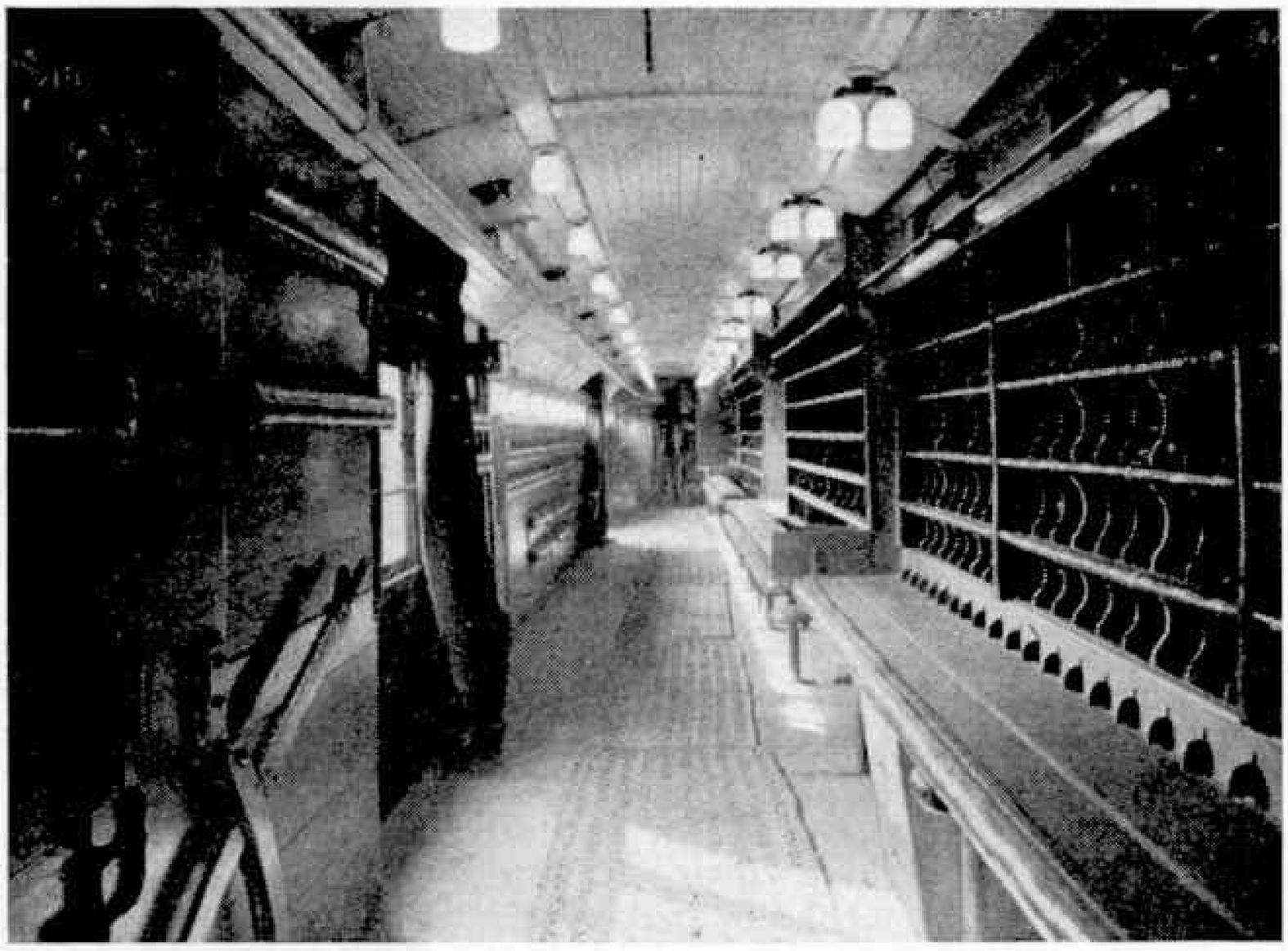
A steady stream of mail vans brings more and yet more mail to the waiting train, and as the hands of the station clock creep slowly round to departure time it must appear to the onlooker that the postal staff are facing a hopeless task. But remember—the mail always gets through.

Almost time now, and one or two members of the public are making their way along the platform to post their letters in the late fee posting boxes on the side of the coaches. This can be done at the station of departure, or at any stopping station en route. Finally all is clear. Doors are shut, the whistle blows and she glides slowly and gracefully out into the darkness, dead on time,

Three pouches hang on standards waiting for collection. On the right is the postman's shelter.

the train that all Scotland is waiting for.

During the journey the train will stop at certain stations in order to pick up and put out mail. But that is not all, for while travelling at speeds up to 80 m.p.h. mail is put out and picked up at no less than 18 different places along the route by means of an apparatus on the coach, and another set of apparatus fixed at the side of the railway track.



Inside a T.P.O. coach, empty now, but with sorting tables and pigeon holes full of letters, and sorters hard at work, while on one of its runs.

The coach apparatus is a despatching arm of steel that can be swung out from the doorway, and a very strong net on the side of the coach that can also be swung out.

The trackside apparatus is similar, except that the despatching arm is fixed on a tall standard and the net, close by on the ground, is fixed on a frame that can be raised to open the net.

Shortly before the train reaches the point where mails are to be exchanged, two men get very busy. One of them, in the coach, swings out the despatching arm holding a leather pouch containing mail that has been sorted on the train and also opens the coach net. A postman standing up the line hangs his leather pouch on the trackside standard and opens the ground net.

The train rushes by—the train net sweeps off the pouch hanging from the standard arm, shooting it into the van with a crash. At practically the same time the train pouch is shot into the lineside net, the postman meanwhile sheltering in his cabin to protect himself from the flying train pouch if by some chance this missed the net—a very unlikely event, by the way.

From long experience, and with his ear attuned to the different kinds of sound a train makes, the man in the coach knows exactly where to put out his apparatus, even on dark and foggy nights. Split second timing is essential, because for example, if he put out his net too soon it could crash into a bridge or, passing through a station, might pick up a porter on the platform and take him for a free but unpleasant ride on the night mail!! But these too are unlikely events.

As the T.P.O. proceeds northwards the London staff are replaced by men from Scotland, who will work the T.P.O. to its destination. By that time the 150,000 letters that come to the *Down Special T.P.O.* during its northward trip have been distributed to thousands of different places, and the sorting frames are bare. But in a few hours the T.P.O. will again be running, this time back to London as the *Up Special T.P.O.*, with yet more thousands of letters on board.

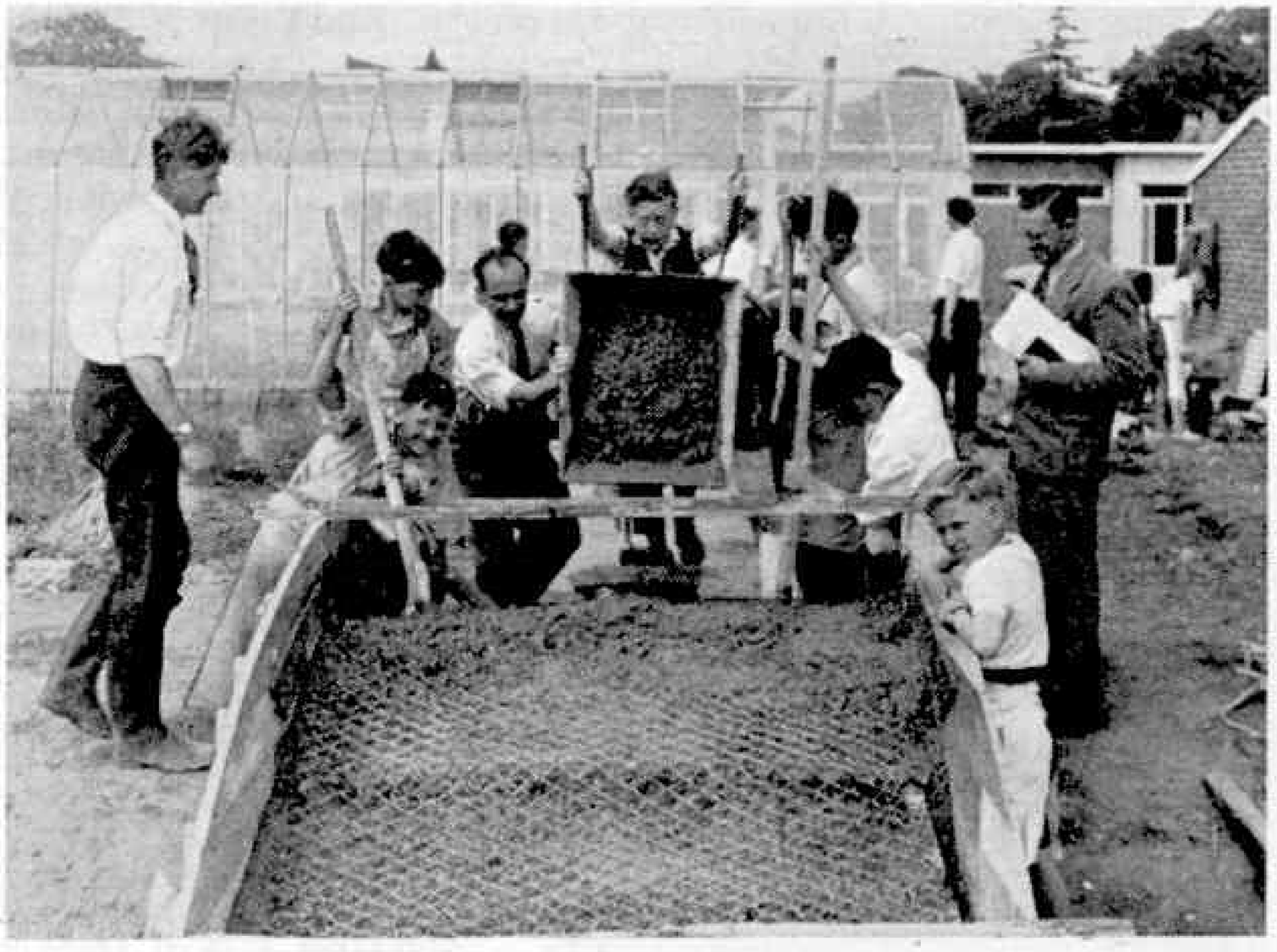
Stamp Collectors' Corner—(*Cont. from page 219*)

overprinted with the familiar Self Government and the date **1947** was added. There are one or two very nice shades, which have been listed in the Commonwealth Catalogue; they are all quite inexpensive, and besides these, there have been one or two attractive and inexpensive commemorative sets.

So if a collection is started with the 1938 issue, quite a nice show can be got together without too much expenditure. Even a collection to the top face value of 1/– is well worth looking at. And it is to Malta that I suggest those looking for a new country to collect might turn. Apart from the new set which, as I have already stated, may have a short life, other stamps of interest may appear in the not too distant future.

MECCANO MAGAZINE

Junior Section



"Caution. Boys at Work." Pupils of St. Crispin's Secondary Modern School, Wokingham, busily engaged in constructional work on a reinforced concrete bridge in the School grounds.

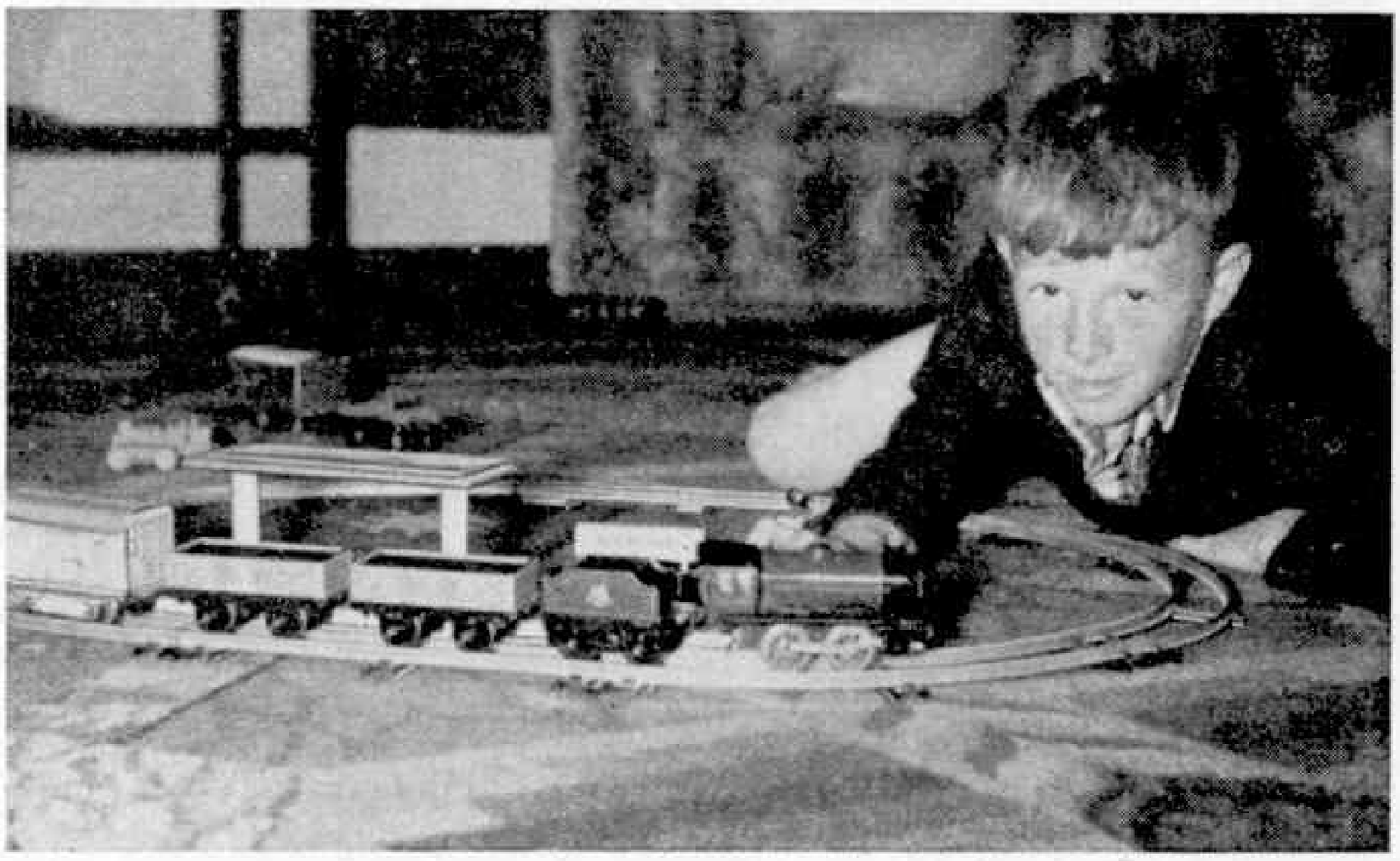
THERE are often times when I wish I were back at school again. It seems to me then that it would be fine, if miraculous, if I could return to the joys and carefree spirit of those days, especially if I could keep my present knowledge and experience of the world—which would be even more miraculous! With it I might be able to appreciate some features of school life more than I did, and perhaps I would make a better start in life at a second attempt.

But I am not writing this in order to preach. One of the occasions when I did really wish myself back at school again was when I saw the picture reproduced above on this page. I certainly had some good fun at school, but I never enjoyed such delights as mixing and pouring concrete into wooden forms, and tamping it down, in order to make the reinforced sections of a bridge.

All boys like to make things, and usually they can create a tremendous amount of fun for themselves in doing so. That is one reason, as you all know, for the immense popularity of Meccano model-building, and for the enthusiasm that thousands of boys show for the construction of miniature railway layouts.

It is easy to see that the boys in the picture above are showing great zest in their unusual task. And I think there is some reason to believe that the masters enjoyed it too!

The bridge was wanted to give access to a separate part of the grounds of St. Crispin's Secondary Modern School, at Wokingham, Berkshire.



Graeme Kitto, of Coromandel, New Zealand, H.R.C. No. 270631, is a Hornby Train enthusiast and enjoys nothing better than running train services on his layout.

On Points

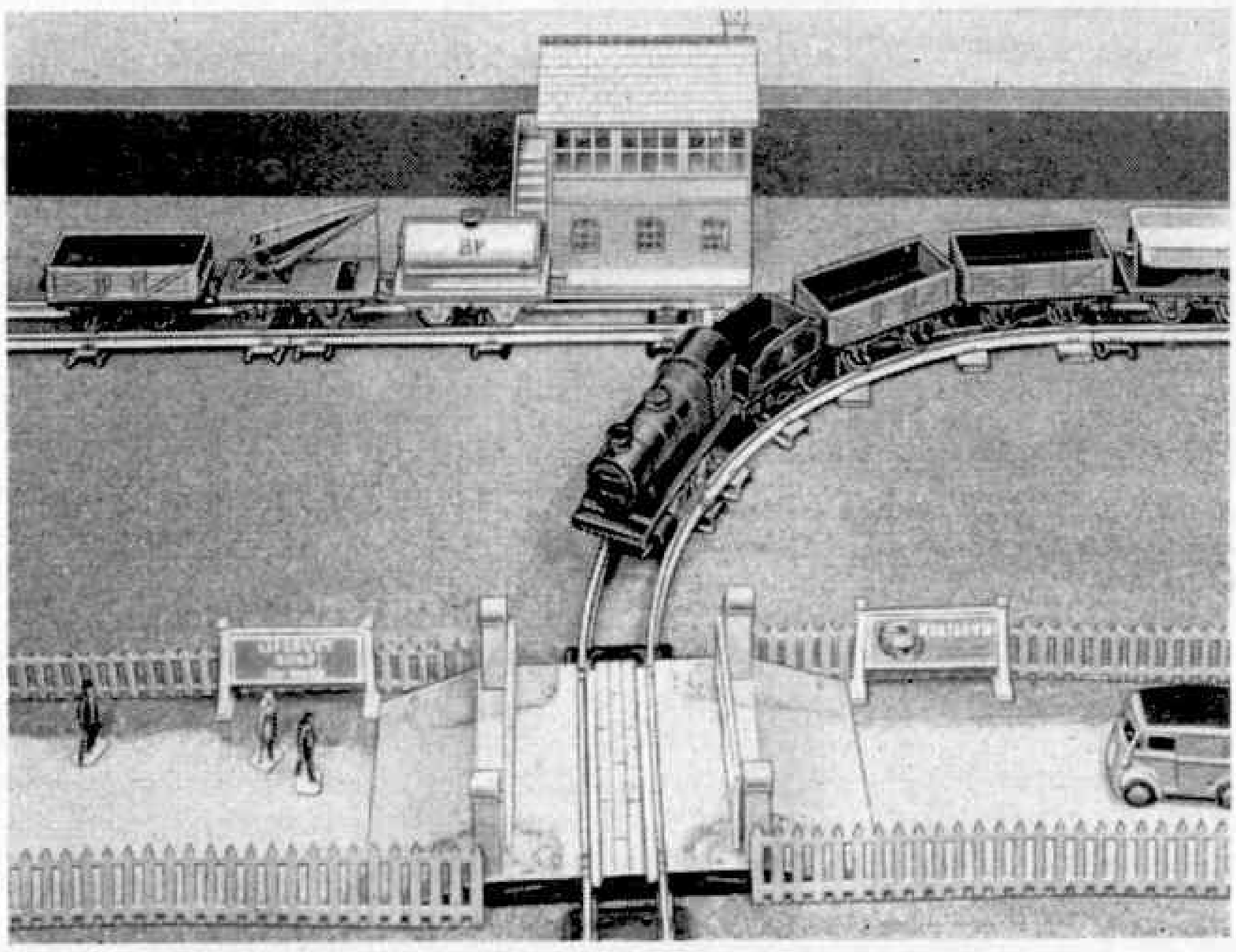
By "Tommy Dodd"

IN our talks recently I have told you something about Hornby Rails and the running of Hornby Trains. There are other things along the same lines that we can usefully consider, and this month I propose to deal with Points, which to my mind must be included in any Hornby Train layout.

We have to remember that Points in Hornby Gauge 0, either 2 ft. or 1 ft. radius, correspond in length and radius to the straight and to the curved rails of the system, so that it is not really difficult for us to see whether Points will fit in a particular place or not. Do not try to "squeeze" Points in! Take care to use 1 ft. radius Points with 1 ft. radius Curved Rails, and if your layout includes 2 ft. radius Curved Rails then use 2 ft. radius Points, if you want good running—and I am sure you do.

And another thing to watch! See that your Points fit naturally into the position you have chosen for them, especially if your layout is a bit irregular in shape, and that the base on which the track is laid is quite level where the Points are to be.

I cannot stress too much the importance of having Points correctly connected to the adjacent Rails and the different components correctly lined up. Where the track is screwed to a baseboard it is specially important to see to all these things before screwing down is begun. Otherwise you will have to do some of your work all over again. Once a good "line" is obtained and screwing down—not too tightly—is completed, the track will remain set and will not have to be disturbed again until you extend it or make changes.



A goods train of No. 20 stock takes the facing Points and approaches a Level Crossing on a simple rail-road layout. The Crossing Gates are correctly closed to road traffic.

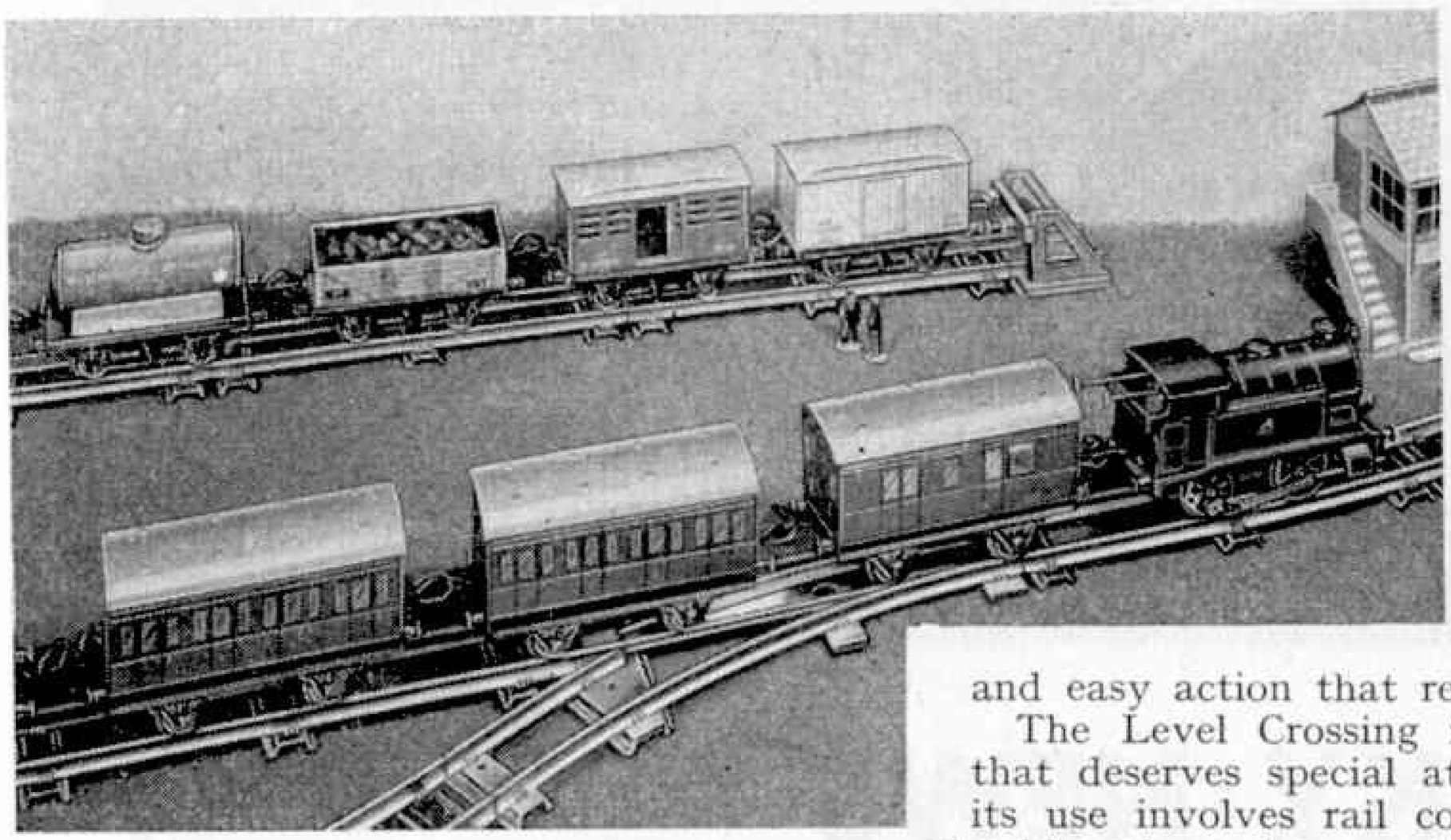
Rail Connecting Plates, provided with Hornby Rails to lock together the end sleepers of adjacent pieces of track, must be used on layouts on which the rails are not screwed down. If they are left out, the rail joints may open and you will have derailments. But these Plates cannot be used at the facing end of Points, as the sleeper on which the Points operating lever is mounted is of special construction. So at this joint use the wire Points Connecting Clips.

So much for the installation, for the Permanent Way Department side of things. What about the use of Points in the actual running of the railway? The Points lever is easily worked to set the moving switch rails either for the straight run or for the curved branch of the Points. It should be pressed well down at each end of its movement, so that the switch rails at the facing end of the Points lie close against the fixed or stock rails as they are called. The switch rails are specially shaped to allow them to do this

and the flanges of the wheels will pass smoothly over them when the Points are properly set.

You may have noticed a short projecting tongue of spring steel underneath the other end of the switch rail unit. As the switch rails are moved over, this travels from one end to the other of a slot formed in the sleeper that supports this end of the switch rails. The slot is shaped so that the tongue is held at either end of it once it has reached that position, yet the Points can be moved quite easily when the lever is worked. When the switch rails are *fully* over in one position or the other, the straight or curved switch rail, as the case may be, should line up exactly with the next section of fixed rail. If it doesn't a very little adjustment is needed to put matters right.

Any lack of adjustment here through careless or rough handling may not be noticed with trains using the Points in the trailing direction, but soon shows up when trains travel the other way.

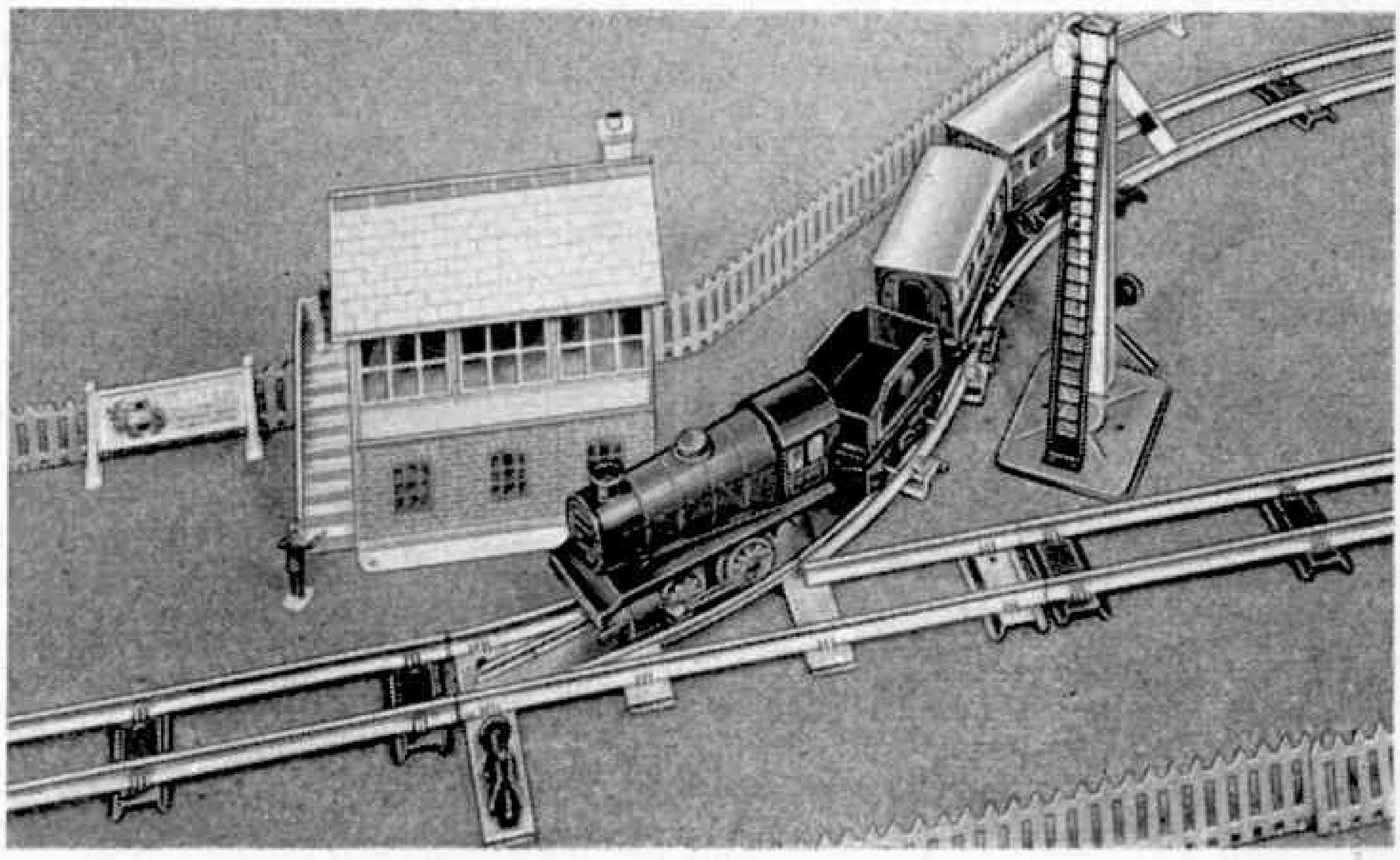


Over the Points in a trailing direction goes a stopping passenger train, with a No. 40 Tank Locomotive at its head.

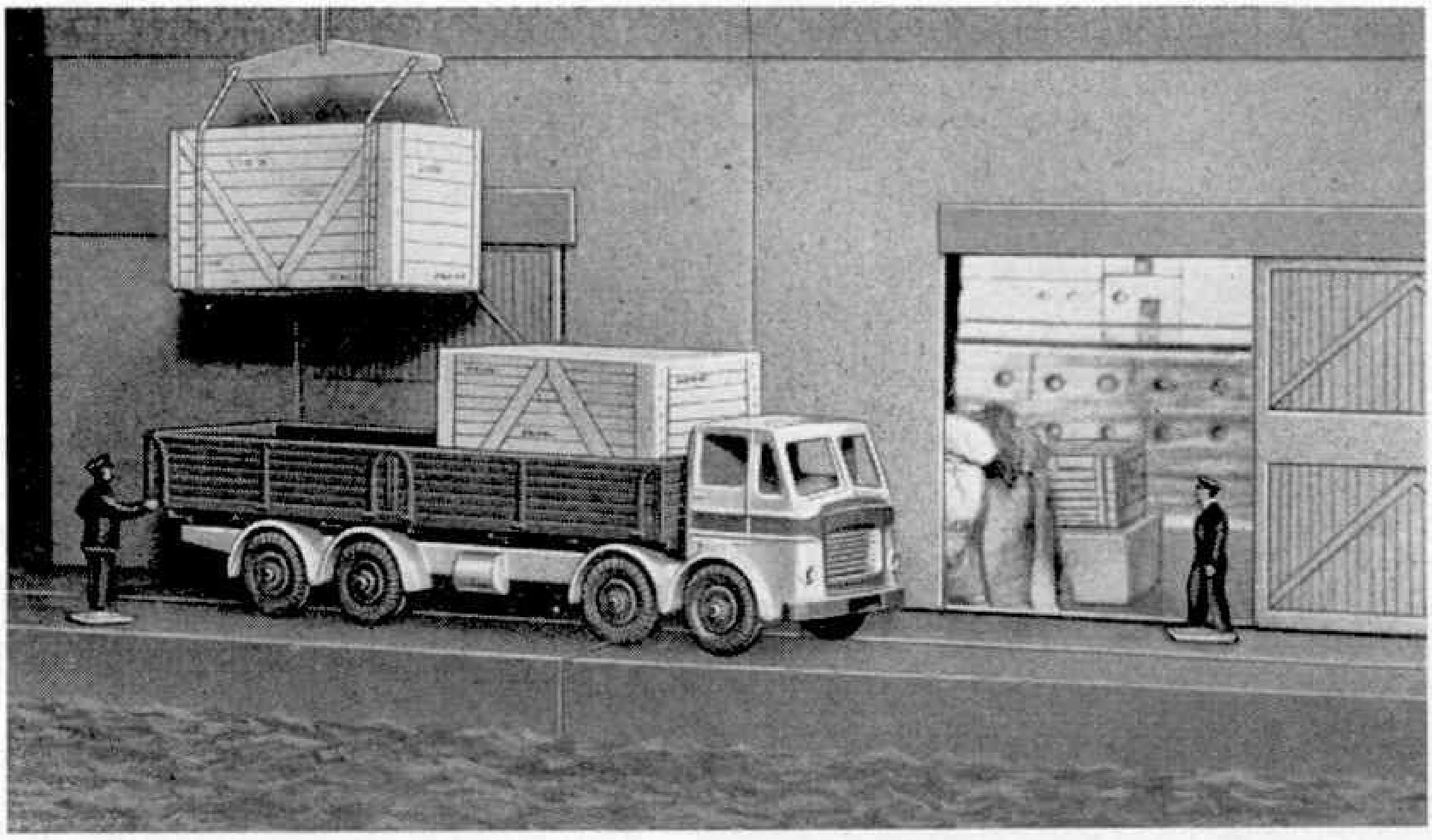
In earlier times it used to be a sort of rule not to oil the working parts of Hornby Points, but with the present type of Points it is not a bad idea to oil *sparingly* the locking tongue underneath and the Points lever and rod joints. You will appreciate the smooth and easy action that results.

The Level Crossing is another item that deserves special attention because its use involves rail connections. You should make quite sure that the Crossing fits where you want it to go in a layout. It is equal in length to a standard Straight Half Rail and one of the latter is packed with the Crossing so that it is easy to add the Crossing to an existing track without too much re-arrangement of the rails already in place.

Connection of the Crossing to the adjacent rails should be firm and the rail ends that form part of the Crossing itself must be kept in good condition. Special care therefore is necessary when disconnecting the Crossing from other rails when running is over.



A No. 21 Passenger train is coming round to the main line from a branch.



DINKY NEWS

By **THE TOYMAN**

More exciting New Models

THE two new models I want to bring to your notice this month are both vehicles, but they are very different in design. First of all I would like to draw your attention to the splendid Leyland Octopus Wagon. This is one of the largest vehicles in the series, and of course it is included in the range of Dinky Supertoys. Its catalogue number is 934.

Leyland vehicles are renowned for their sturdy construction and their ability to carry heavy loads, and the new Dinky Supertoy is no less noteworthy in these respects than the real Octopus wagon. The long, sturdy load platform makes it an ideal vehicle for carrying large and heavy loads in your play schemes, just as the actual vehicle does in real life. The model is finished in green and yellow, with red wheels, and is most attractive, as you will see from the picture in full colour on the back cover of this issue.

In this dockyard scene a Leyland Octopus, Dinky Supertoys No. 934, is shown discharging a heavy load of machinery.

When I received the Leyland Octopus my first job was to find a load worthy to be carried by such a powerful looking wagon. I decided on large crates of the kind often used to pack heavy machinery, and I set to work to fashion two crates from cardboard. I did not want anything too elaborate, as I was anxious to put the new model into use as soon as possible, so I simply cut the cardboard and glued it into shape, then used black ink to mark the planks, straps and other details of the crates. A few numbers and letters to represent the mysterious markings usually found on these crates in real life completed the job, and I had the realistic load you can see on the Leyland Octopus in one of my pictures.

Now that I had the model and its load, the next step was to send it on its journey to a suitable destination. These wagons are used for such a variety of work that practically any warehouse or factory would have answered the purpose, but for a complete change I decided to try a dock scene.

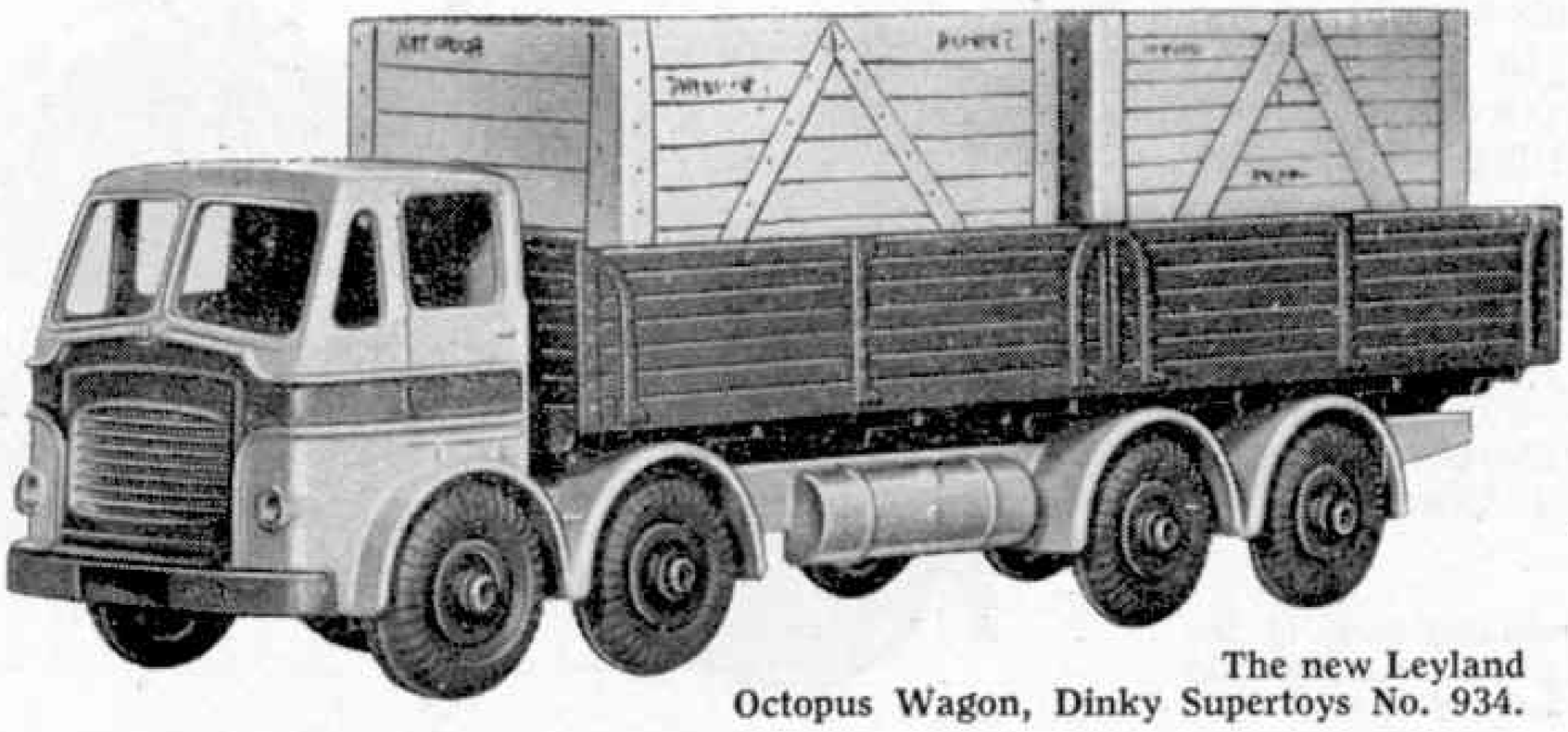
First of all I obtained some large sheets of cardboard and used these to make the sides, walls and roof of a long, low building representing a typical dock shed. You can see part of this building in one of my pictures and you will notice that I cut out large doors in each side. When the shed was placed on the wood blocks that form the quay of my dock scene,

The excellent moulding and graceful appearance of the new Dinky Toys Ford Zephyr Saloon (No. 162) are well shown in this Dinkytown street scene.

I sketched the outline of part of the hull and superstructure of a ship on a sheet of paper and pinned this behind one of the doors along the rear side of the shed. From the front this gave the appearance of a ship moored alongside the quay ready to load its cargo.

For large crates such as those on my model a crane is really necessary to handle them. You can make use of the Goods Yard Crane, Dinky Supertoys No. 973, or if you have a Meccano Outfit you could put it to good use to make a model of a typical dockside crane. You can see how realistic a scene of this kind appears from my picture, which shows the Leyland Octopus alongside the shed with one of the crates being lifted by the crane.

The second new model this month is based on one of the most attractive cars produced by the Ford Motor Co. Ltd. The Ford Zephyr, with its splendid appearance and impressive performance, has been suggested by many enthusiasts as a "must" for their Dinky Toys collections, and now a perfect miniature of this well-known car is available. The Dinky Toys Ford Zephyr Saloon, No. 162 in the range, is shown in a typical street scene in one of my pictures, and in colour on the back cover. It can be obtained in two attractive two-tone colour schemes, cream and green or two shades of blue, and is indeed a worthy addition to the range of Dinky Toys cars. There is sure to be a big demand so get yours early!



The new Leyland Octopus Wagon, Dinky Supertoys No. 934.

Easy Model-Building

Spanner's Special Section for Juniors

THIS month I have chosen an attractive working model for the owners of a No. 4 Outfit or one larger. It is the realistic Mobile Crane shown in Fig. 1, and I think you will find it interesting to build and to play with when you have completed your model.

The wheeled base of the model should be made first. Bolt two $5\frac{1}{2}''$ Strips to the longer sides of a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate so that each Strip overlaps the Plate by seven holes. Now connect the ends of the Strips by a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip and bolt a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate between this and the Flanged Plate. A U-Section Curved Plate 1 is then fixed to each end of the base.

The wheels should be fixed on 4" Rods held in place by Spring Clips. Support one of these Rods in Flat Trunnions bolted to the base and mount the other in Fishplates. Make the mudguard on each side from a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ and a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate bolted together and shaped as shown, and fit a Formed Slotted Strip to each end. Attach the mudguard to the base by an Angle Bracket at the centre, and at each end bolt a $5\frac{1}{2}''$ Strip between the Formed Slotted Strips and the Curved Plate 1.

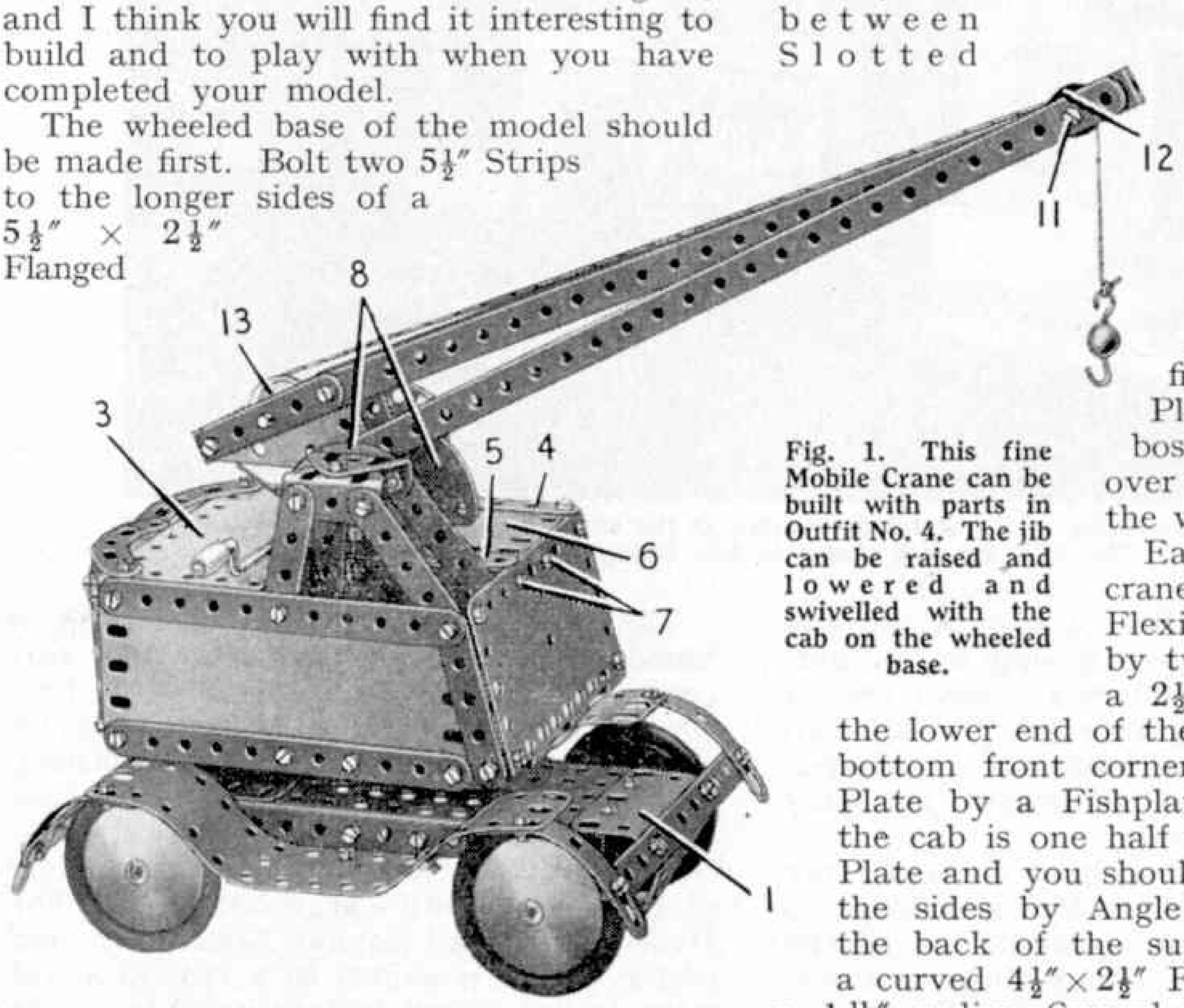


Fig. 1. This fine Mobile Crane can be built with parts in Outfit No. 4. The jib can be raised and lowered and swivelled with the cab on the wheeled base.

You should complete the base by bolting a 3" Pulley to two $\frac{1}{2}''$ Reversed Angle Brackets fixed to the Flanged Plate so that the boss of the Pulley is over the centre hole of the wheeled base.

Each side of the crane cab is a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate edged by two $5\frac{1}{2}''$ Strips and a $2\frac{1}{2}''$ Strip. Connect the lower end of the $2\frac{1}{2}''$ Strip to the bottom front corner of the Flexible Plate by a Fishplate. The front of the cab is one half of a Hinged Flat Plate and you should connect this to the sides by Angle Brackets. Make the back of the superstructure from a curved $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate and a $1\frac{11}{16}''$ radius Curved Plate overlapped four holes, and connect them to the sides by Obtuse Angle Brackets.

Fit three $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips to a Flanged Sector Plate 2 as shown in Fig. 4, and bolt the lugs of the Double

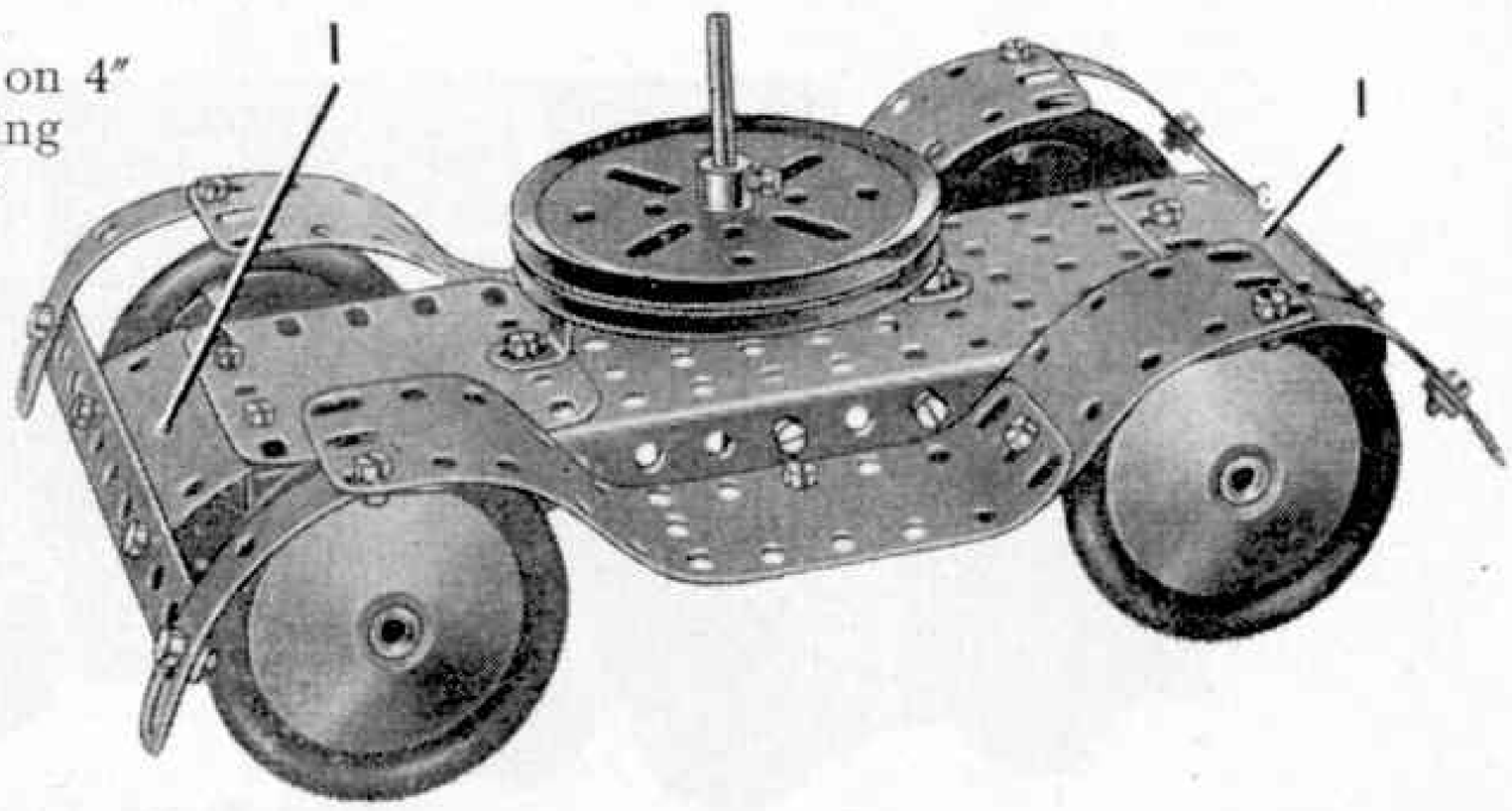


Fig. 2. The wheeled base of the crane, showing the bearing that supports the cab and jib.

Angle Strips to the sides of the cab. Fix a $3\frac{1}{2}''$ Rod in the 3″ Pulley attached to the base and place another 3″ Pulley loosely on the Rod with the boss uppermost. Then pass the Rod through the centre hole of the Flanged Sector Plate 2, and fix on it a 1″ Pulley fitted with a Motor Tyre. This Pulley serves to hold the base and the cab together.

Fill in the top of the cab by attaching the other half 3 of the Hinged Flat Plate to Angle Brackets bolted to the upper rear corners of the sides. Two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Triangular Flexible Plates and two $2\frac{1}{2}''$ Stepped Curved Strips also should be supported by the Angle Brackets to fill in the rounded end. Bolt a $3\frac{1}{2}''$ Strip 4 between the half of the Hinged Flat Plate and an Angle Bracket fixed to the front of the cab, and fix another $3\frac{1}{2}''$ Strip 5 to the half of the Hinged Flat Plate (Fig. 1). A $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate 6 can now be bolted to the Strip 4 and to a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flanged Plate, one flange of which should be fixed to the front of the cab by two bolts 7.

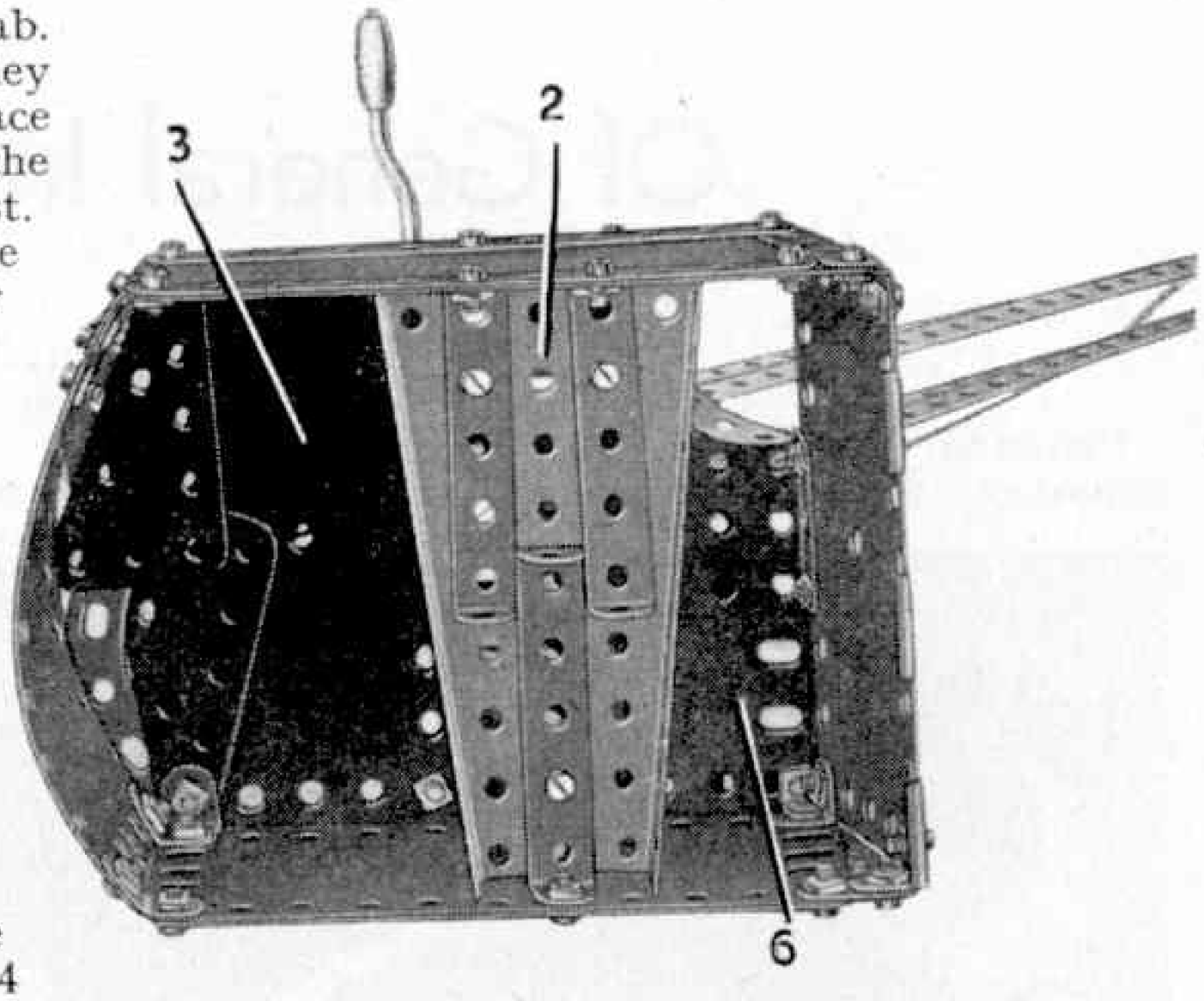


Fig. 4. An underneath view of the cab removed from the wheeled base.

Make the top of the driver's cabin from two Trunnions and arrange two $2\frac{1}{2}''$ Strips on each side to form the window frames. The outer pair of Strips must be bolted to the side of the superstructure as shown. The support for the jib is arranged by fixing a $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip to the Strip 5 and to the rear edge of the Flexible Plate 6. Two Semi-Circular Plates 8 are bolted tightly to the lugs of the Double Angle Strip.

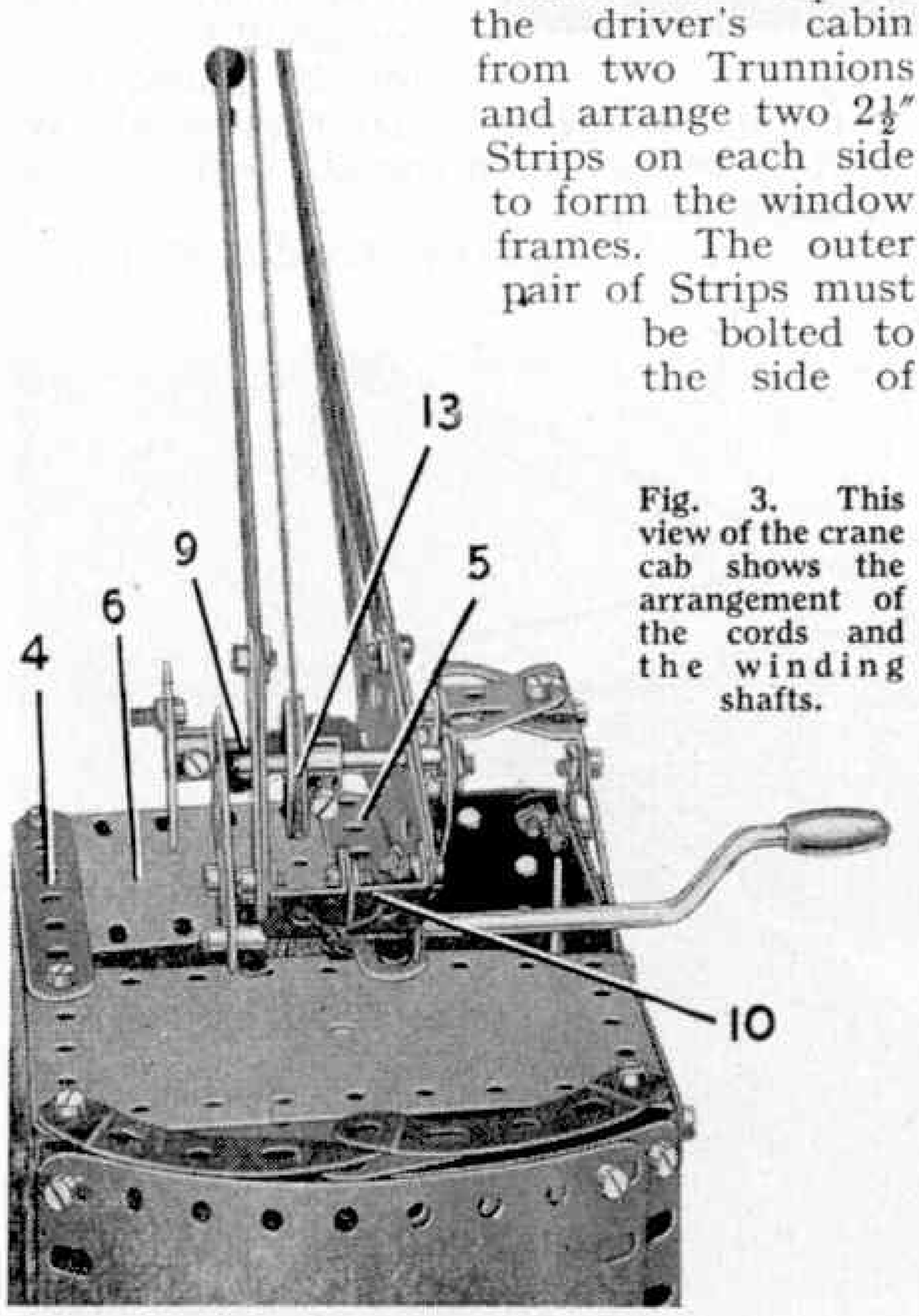


Fig. 3. This view of the crane cab shows the arrangement of the cords and the winding shafts.

You can make each side of the jib with two $12\frac{1}{2}''$ Strips, a $2\frac{1}{2}''$ Strip and a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Triangular Flexible Plate. Pass a 2″ Rod 9 through the Semi-Circular Plates 8, the Triangular Flexible Plates and the rear ends of the lower pair of $12\frac{1}{2}''$ Strips, and hold it in place with Spring Clips. This Rod forms the pivot for the jib and also the winding shaft for the hoisting Cord. The sides of the jib should be connected at the rear by a bracket 10, which you can make from two Double Brackets bolted together, and at the jib head by a Stepped Bent Strip. Take care to attach the Stepped Bent Strip to one side by a standard bolt and to the other side by a $\frac{3}{8}''$ Bolt 11, and place a $\frac{1}{2}''$ loose Pulley 12 on the shanks of the two bolts. Mount a 1″ Pulley 13 on a $1\frac{1}{2}''$ Rod supported in the jib.

The jib can be raised and lowered, an operation called "luffing," by a length of Cord fastened to a Crank Handle and to the bracket 10. The Crank Handle must be mounted in the Semi-Circular Plates 8, and two Spring Clips on it are arranged so that their ends engage the top of the cab and prevent the Clips from turning. This arrangement provides a simple brake on the Crank Handle. A length of Cord tied

(Continued on page 222)

Of General Interest

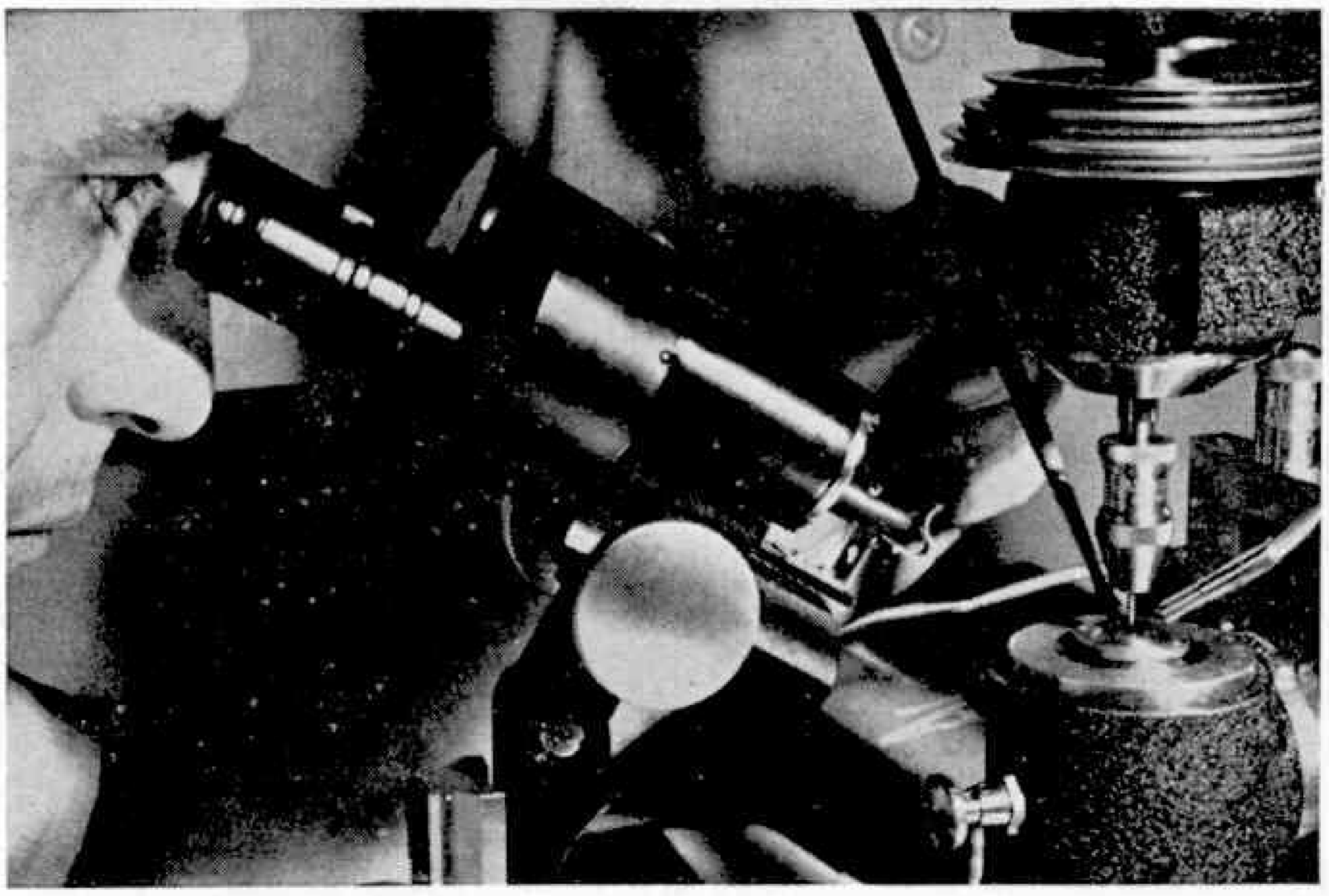
Splitting Hairs

Precision instrument makers of the American General Electric Company's General Engineering Laboratory have recently created a series of extremely small drills that are *the world's tiniest!* These diminutive drills are used for highly specialized machine shop operations such as drilling fuel nozzles, leak orifices, X-ray apertures, etc.

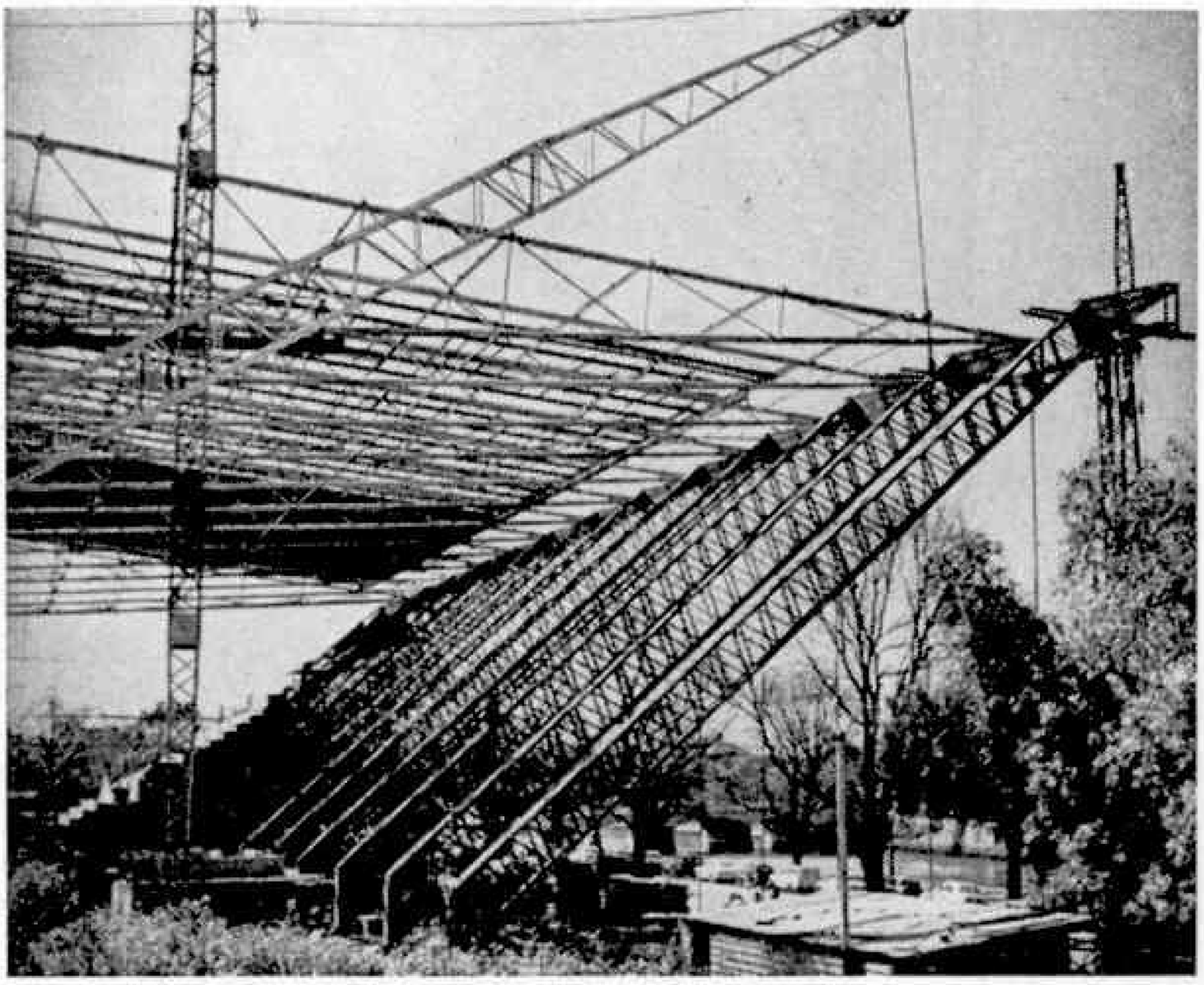
To show the effectiveness of the tiny drills, specialists have not only split human hairs, but have actually drilled holes in single hairs and threaded one-thousandth of an inch wire through the holes. The mystery illustration on the Editorial page is a microphotograph showing the result of this microscopic work.

The new drills range from ten mils, which is a hundredth of an inch, down to one mil, or a thousandth of an inch, and are too small to be seen by the naked eye. They are so delicate that they would be bent or broken upon contact with a piece of facial tissue.

M. LORANT (London W.14).



Peering through a microscope, an instrument maker brushes away minute chips left by a drill, a thousandth of an inch in diameter, that is too small to be seen by the naked eye.



A symphony in steel, formed by girders for stands at the swimming pool for the Olympic Games in November next. Photograph by John Ketelhohn, Murrumbeena, Victoria, Australia.

The "Deltic"

The World's Most Powerful Diesel-Electric Locomotive

LAST December railway enthusiasts throughout the country were startled by the sudden appearance on British railways of a powerful diesel-electric locomotive named the *Deltic*. This was built at the Preston works of the English Electric Company Ltd., a firm that has produced many fine engines of similar type for use on railways in British Dominions and in other parts of the world. It ran trials locally in the Liverpool area, and then between Liverpool and Preston, and its striking appearance, with its performance, suggested that here was something of a kind that would be seen on British railways for many years to come.

The *Deltic* locomotive is described by its makers as the most powerful diesel-electric railway engine in the world. It is a very large one, with a total length over buffer beams of 64 ft., and a height from rail level of 12 ft. 10½ in. Its weight in running order is 106 tons.

From this it is easily gathered that the *Deltic* is a massive engine, and when it is seen on the line there is no doubt left in the minds of the beholders as to its immense power and capabilities. As prepared for its trials, it was also very striking in appearance. The main colour was bright blue, with grey roof and underworks, and striking gold lining on its cab front and sides.

The locomotive owes its power to the development of a new lightweight diesel engine by D. Napier and Son Ltd., from which the locomotive indeed got its name. It is fitted with two of these Deltic power units, each with its own main and auxiliary generators, cooling system, silencer, etc.

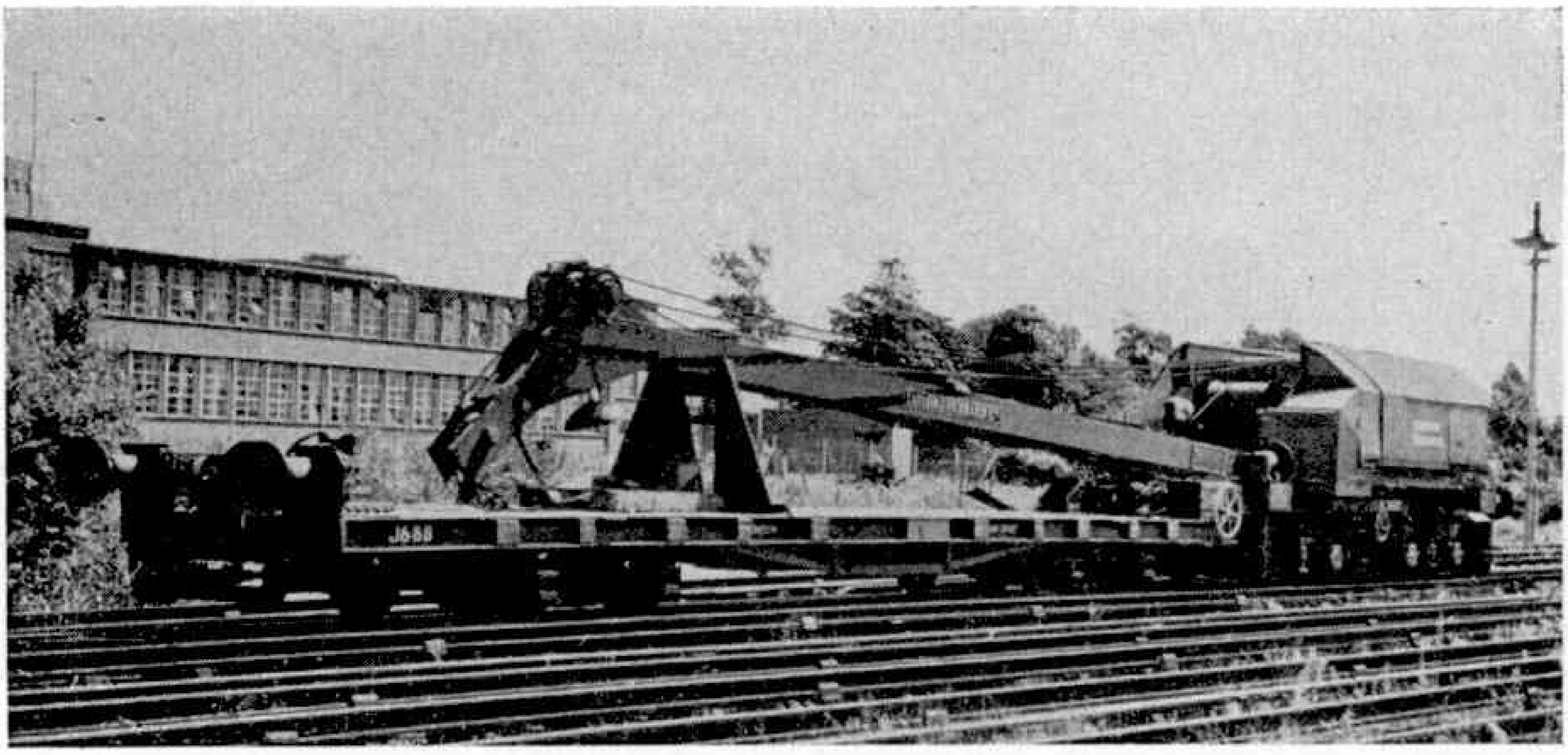
The *Deltic* engine generates one horse power for every six pounds of its weight, and the two engines of the locomotive give it a total of 3,300 h.p. It is of the Co-Co type, which means that its bogies have three axles, each with its own motor, this being indicated by the capital letters C, the o's showing that there are no other axles.

The new locomotive has been designed to have a maximum speed of 90 miles an hour and at the same time to possess the best possible characteristics for hauling loads of various sizes. The claim is made for it that it could reduce the timing of the fastest present-day run from London to Edinburgh by 30 minutes, allowing for the same speed restrictions and operating margins.

A glance at the picture of the locomotive shows that the superstructure consists of a long central compartment, with a driving

(Continued on page 189)

The picture at the top of the page shows the diesel-electric locomotive "Deltic," the most powerful engine of its kind in the world, at the head of a train near Preston, on the London Midland Region of British Railways. Our illustration is reproduced by courtesy of the English Electric Company Ltd., makers of the locomotive.



London Transport's New Crane

Specially Designed to Run Through Tube Tunnels

A RAILWAY crane is always a source of excitement for the railway enthusiast, whether it is seen with its jib lowered to rest on the match truck or carrier wagon provided for it as it is being hauled along the line, or—better still—when it is in action on repairs or maintenance work.

The crane of this kind shown in the two pictures on these pages is of very special interest, for it has been designed and built to pass through the tube tunnels of London's underground railways. It can in fact be hauled in train formation through the tubes at service speeds, so that it can be taken quickly to any place on the Underground Railway network where it is required. Before it was built, more than 100 miles of open track, making nearly a third of the total on the system, could not be reached by rail by existing cranes, owing to load restrictions, or could be reached only by making considerable detours over other railways.

The new crane is actually the first of two specially designed diesel-electric travelling jib cranes built for London Transport and is now in service. It is compact, as would be expected, for it has to be within the tube loading gauge. It is capable of slewing through a complete revolution, and it is so designed that in working it clears cable posts, platforms, etc., and offers as little obstruction to traffic on adjacent tracks as possible when it is actually working. Its axle loading necessarily is restricted and could not be more than 13 tons.

Taylor and Hubbard Ltd., Leicester, the makers of the crane, had to exercise no little skill and ingenuity in satisfying the rather severe conditions laid down. One point that gave rise to considerable thought was the planning of the articulation at the foot of the jib that is necessary to allow the crane to travel round the curves in the Tube tunnels. How necessary this was is shown by the fact that the jib itself is 37 ft. long. The articulation is provided automatically when the jib is lowered on to its carrier wagon, and the re-engagement of the foot of the jib, when raised for use, also is fully automatic.

As the illustrations show, the undercarriage of the crane has three axles, and it is equipped with automatic couplers of the tube type, and in addition has draw-gear and hinged buffers of Railway Clearing House Standards. The weight is distributed between the three axles.

The picture at the head of the page shows the new London Transport 6-ton crane with its jib lowered on its carrier wagon. It has been specially designed to allow it to run through London Transport's tube tunnels and can be taken quickly to any place on the Underground network where its services are required.

The wheels of the middle axle have no flanges and are close to the trailing axle in order to avoid fouling the check rail on the curves of minimum radius. The swan-neck jib is of rolled steel channel sections, with cross bracing that is well shown in the illustration at the foot of this page.

The crane is fitted with a 3-cylinder diesel engine of 75 h.p. at 1,000 revolutions a minute. This is usually started from the battery, but there is cartridge starting equipment for use when the battery is run down.

The new crane is seen at work in the picture below. Power for all purposes is obtained from a 75 h.p. diesel engine, which drives a 49½ kW generator, or from the current rail of adjoining tracks.

The engine has two control speeds, idling and full, and is coupled to a 49½ kW generator that provides power for the movement of the crane and for hoisting, derricking, and slewing. For each of these movements there is a special 600v. motor, acting through reduction gearing. Current for the motors can be obtained from the current rail of an adjacent track by means of collector shoes, trailing cable and power socket on the crane carriage as an alternative to the diesel generator unit of the crane itself. Electro-mechanical brakes are fitted to the hoisting and braking motors.

The crane can lift, when free on the rails, 5½ tons at a radius of 15 ft., decreasing to 1¼ tons at 35 ft. radius. When it is blocked up, it can lift 6 tons at 16 ft. radius, decreasing to 2 tons at 35 ft. radius. The hoisting speed is 50 ft. per minute for a load of 6 tons, and 100 ft. per minute for one of 3 tons. Loads of 6 tons can be derricked at 35 ft. per minute, and slewed at two revolutions a minute, while with 5-ton loads the crane can travel at a speed of 264 ft. a minute.

There is of course a safe load indicator for the crane, fitted in the brake rope. It gives warning that can be seen and heard when the safe load is exceeded, whether the crane is "free on rail" or is "blocked up" in action. A colour light panel to the front and right of the driver keeps him informed, and another panel mounted outside the superstructure on the extreme left front gives warning to men working at the load itself if conditions are not so good. This indicator operates from the 24v. starter battery, which is charged from a generator on the diesel engine, but it can also be worked from a separate motor generator set when the crane is operating from the track current supply.

Limit switches prevent overwinding and travel of the jib beyond set positions.

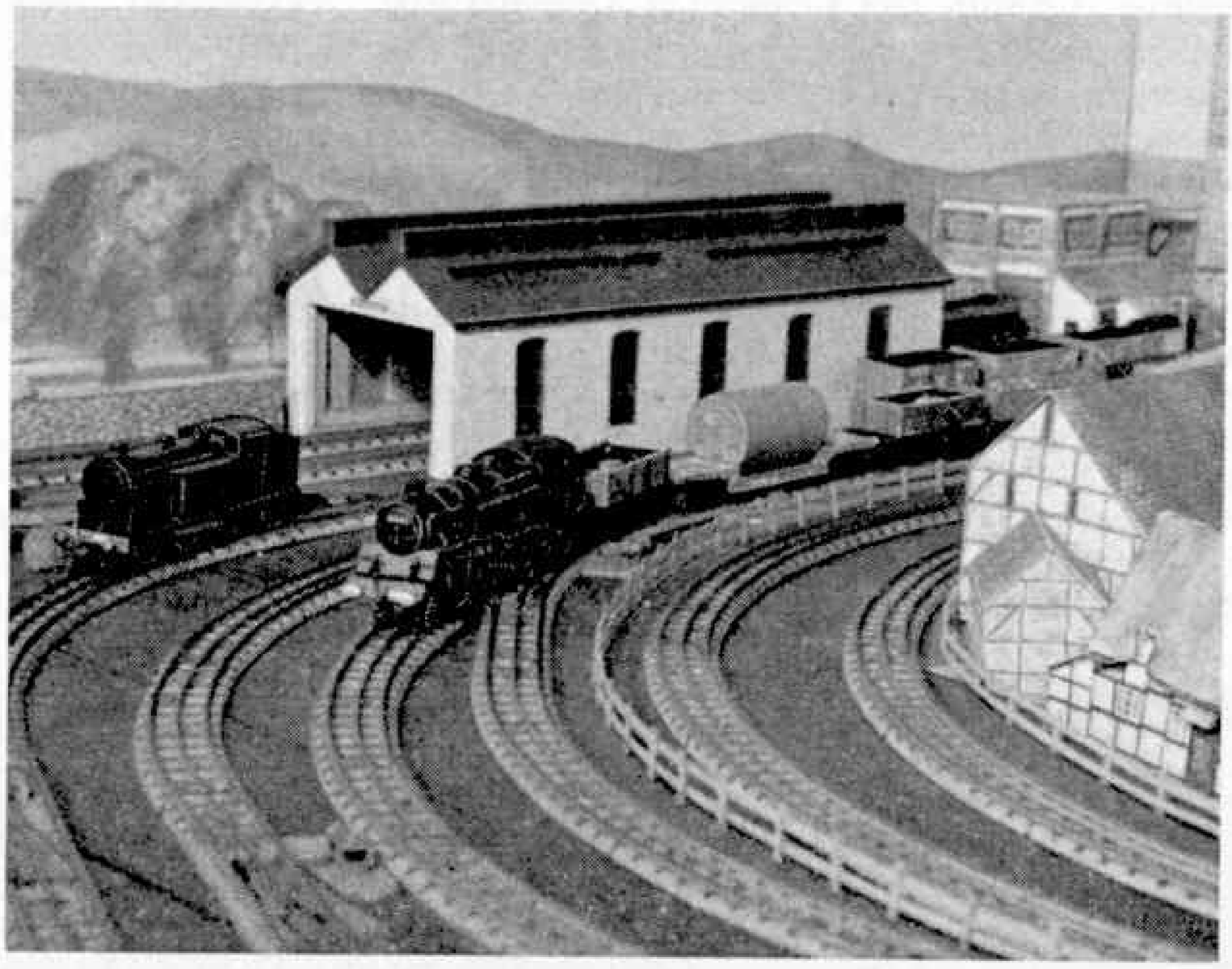
HORNBY RAILWAY COMPANY

By the Secretary

Good News

THIS month I must begin our chat at the tail end of the train, a goods train in fact, the reason being obvious from the upper picture on the next page. Western Region enthusiasts will be specially glad to see this, as the Hornby-Dublo Goods Brake Van shown represents a typical Western brake in B.R. livery. The model was available in G.W.R. finish until some time ago and you will all be delighted to see it again in up-to-date style.

I am sure that the Western enthusiasts who have been pressing for its return will lose no time in adding this vehicle to their stock. They will not need to be told very much about the details of this Van. But for the benefit of younger enthusiasts, and those not too familiar with Swindon practice, I can say that this Hornby-Dublo Goods Brake is a fine reproduction of a typical long-bodied W.R. goods brake van, with its characteristic deep verandah at one end only.



A heavy freight train, including a boiler on a Hornby-Dublo Well Wagon, on the layout of R. Wild and F. Walton that is described on pages 208-9.

The printed tinplate details of the bodywork are excellent, showing the usual W.R. details, such as the longitudinal planking, the vertical "T" strapping and the narrow windows of the guard's "house." The lower body sides of the latter and the "fence" of the verandah have no planking shown, because steel sheets form these parts in the original.

The body colour is grey, as used in B.R. practice for those vehicles that do not have automatic brakes. Body details are in fine black lines and lettering in white, the latter colour also marking the representation of the handrails, of which there is such a generous disposition on the full size vehicles.

A point of special interest in connection with the markings on the Van, which of course follow B.R. practice, is that the allocation *Park Royal* is shown on the sides. Such a real van is therefore likely to run almost anywhere on the Western Region, while it is not unknown for Western brakes to wander even further afield. This means that the model can be sure of a good reception from all Hornby-Dublo enthusiasts.

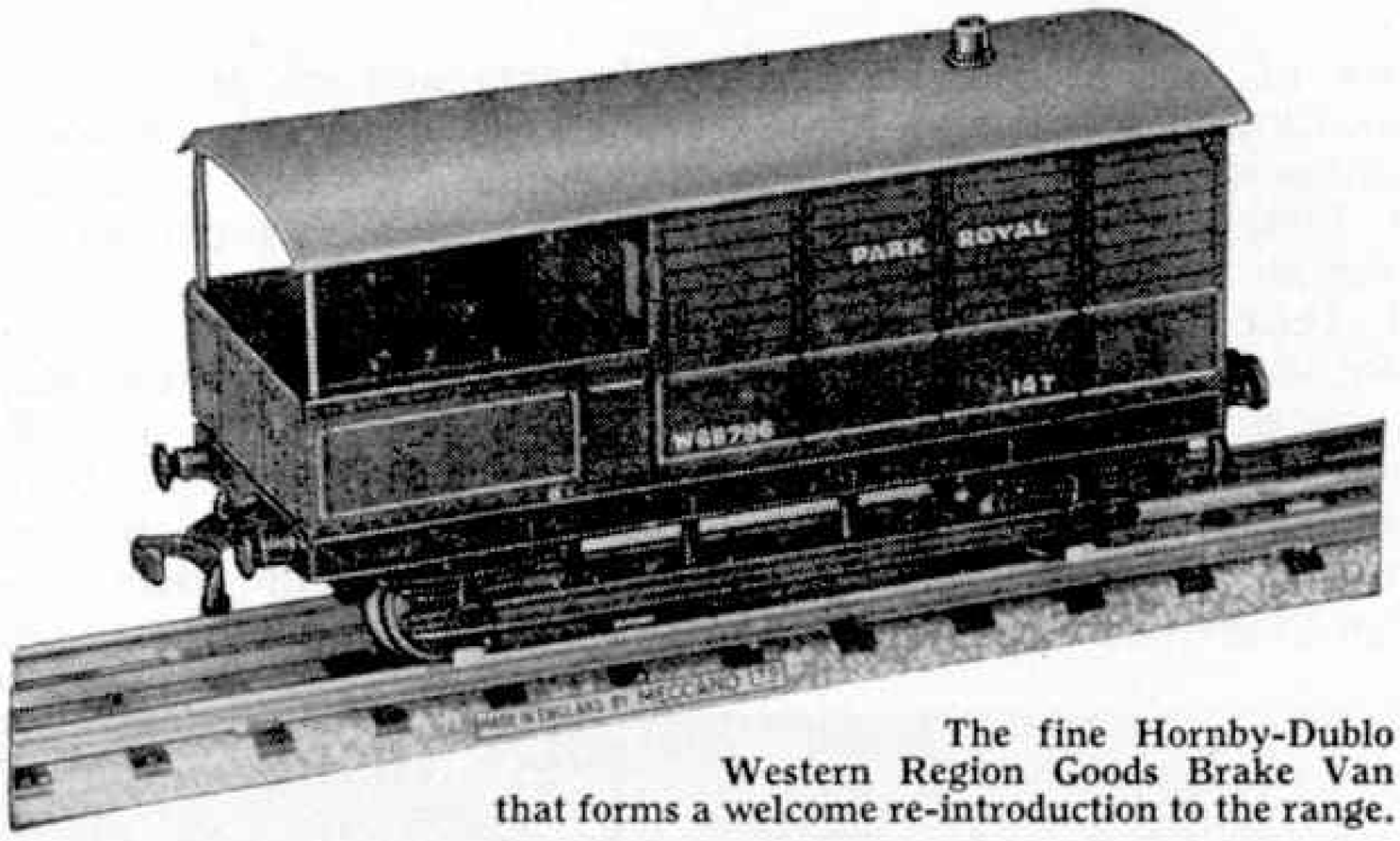
Its characteristic design makes this introduction quite distinct from the other Goods Brake Vans now in the System. The body is mounted on a die-cast base incorporating the long footboards, as provided on real goods brakes, and the roof carries a chimney, suggesting the presence of a stove inside the van so that the Hornby-Dublo goods guard can keep warm on long night duties.

While we are talking about goods trains I would like to draw your attention to the other two illustrations here. I have chosen these pictures to illustrate part of our chat, because they show how effectively the Well Wagon recently introduced can be loaded in a realistic manner. In one instance the load represents a boiler, a product of a kind often seen in transit and for which a

low-loading vehicle is essential. Shops, factories, works and premises of all kinds need boilers for one purpose or another.

A miniature boiler is not really a difficult thing to make if you have a cardboard tube, or even a plain round tin of suitable size. With a cardboard tube you will have to close up the ends, but if you are using a tin this is already done for you. You can paint the boiler a reddish brown shade and mark the various joints, furnace doors and other details on it with Indian ink or fine paint lines. As a rule, new boilers being transported have painted or stencilled on them in white the names of their makers, so here is a chance for those who are good with a paint brush to get busy.

If the boiler sits nicely in the well of the Well Wagon it will travel quite safely, but you can lash it down if you wish, or provide little bits of wood "packing" to prevent it rolling about if necessary. The "Loading Foreman" must see that the boiler when loaded does not of course exceed the loading gauge. For this reason large boilers with projecting fittings on top are sometimes seen loaded out of their normal vertical position, being turned slightly to keep down the total height of the load that otherwise would be over the limit of the gauge.

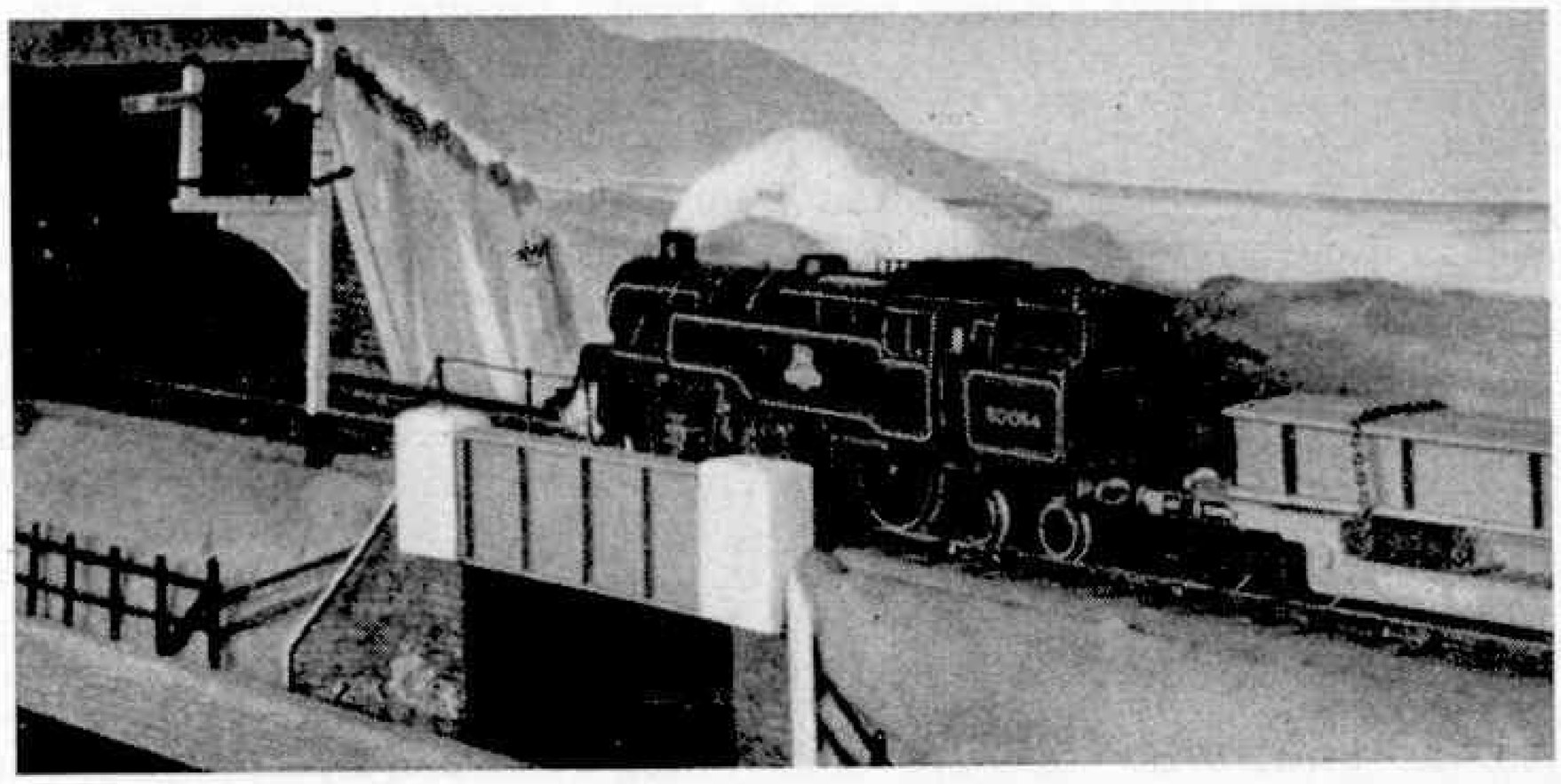


The fine Hornby-Dublo Western Region Goods Brake Van that forms a welcome re-introduction to the range.

Girders and other structural components are other possible loads often needing a heavy-duty wagon for their transport. Evidently this is the case in the lower picture, which shows part of the layout of Mr. R. K. Battson. Here miniature home-built girders are chained to the Well Wagon, using the holes in the four corners of the well to attach the chains.

Girders can be built up from card if you like. Aeromodellers no doubt will employ their favourite Balsa wood, which can be quickly cut and shaped, and rapidly glued and finished with the usual aeromodeller technique, and that is a good tip for others. Fine chain can be bought as a rule at some model shops, but those of you who are ship modellers will most likely have a length or two to spare. Ship modelling will help further in the matter of loads as a miniature ship's propeller and shaft or certain other bulky parts such as funnel sections will make good cargo for the Well Wagon.

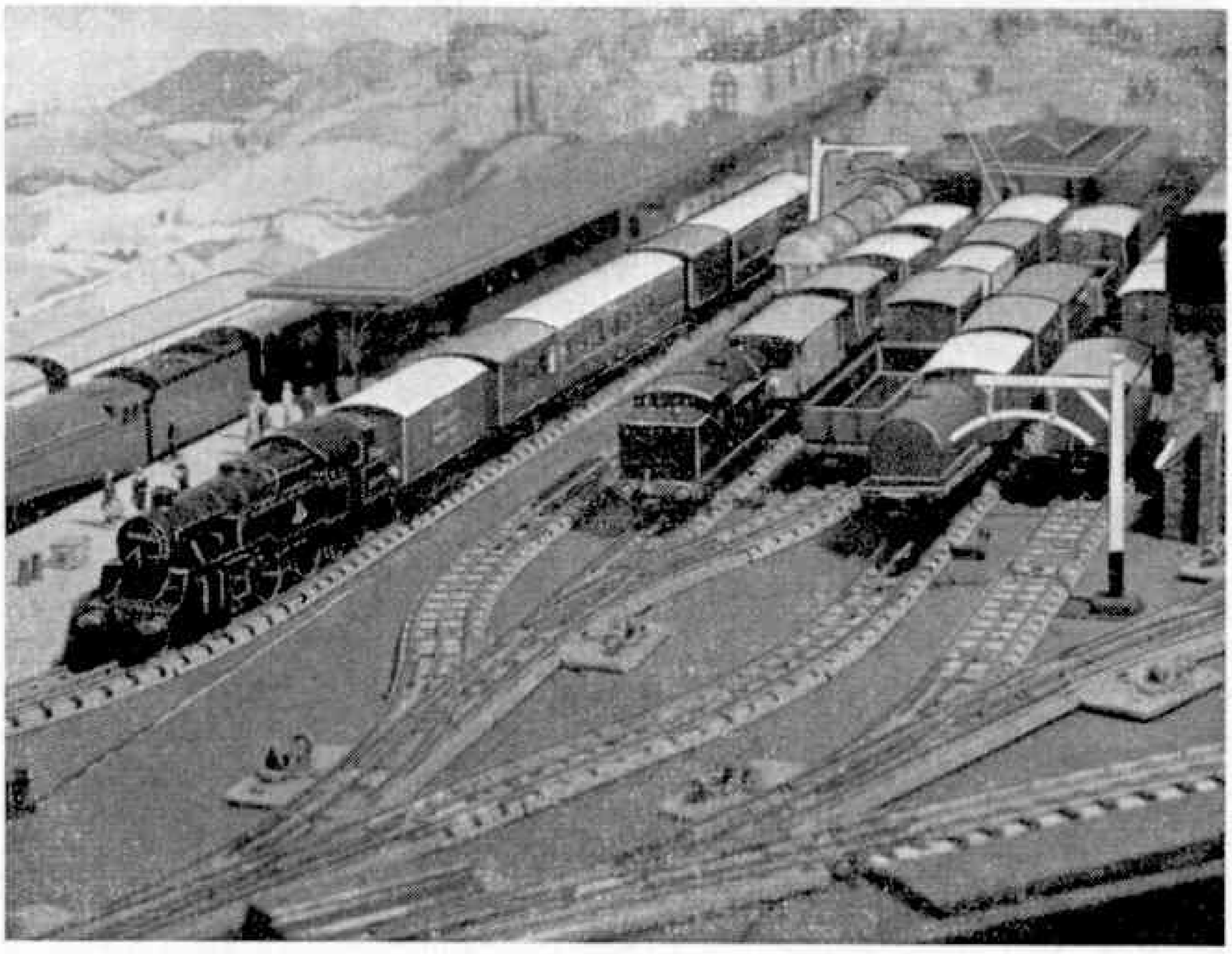
Finally, more good news. Have you seen the Hornby-Dublo Platform Extensions? These useful items are now available, both for the D1 Through Station and for the Island Platform. The Extension for the Through Station carries a back wall to match the style of the Station itself, and the existing ramps. You will, I know, be quick to see about getting these from your dealers, and I hope to say more about them next month.



R. F. Battson of Dorchester has a stout pair of home-made girders loaded on his Hornby-Dublo Well Wagon. Attention to detail is a keynote of his layout.

The "Newark and Westbury" Line

THE Hornby-Dublo railway of which you see parts in the accompanying pictures really had its beginnings quite a long time ago, in 1940 in fact, when Mr. R. Wild, one of the partners of the concern, as a youngster at that time, became the owner of his first Hornby-Dublo Train Set. For quite a long period after that development was impossible because of war conditions, but when Hornby-Dublo became available again the railway began to grow by degrees. Then, a few years ago, Mr. Wild was joined by his present partner Mr. F. Walton, another enthusiast, and by their combined effort the layout has been built up to the state that it has reached today. How fine this is you can judge from the pictures on these pages.



"Newark" Station and Goods Yard on the Hornby-Dublo layout of M.M. readers R. Wild and F. Walton.

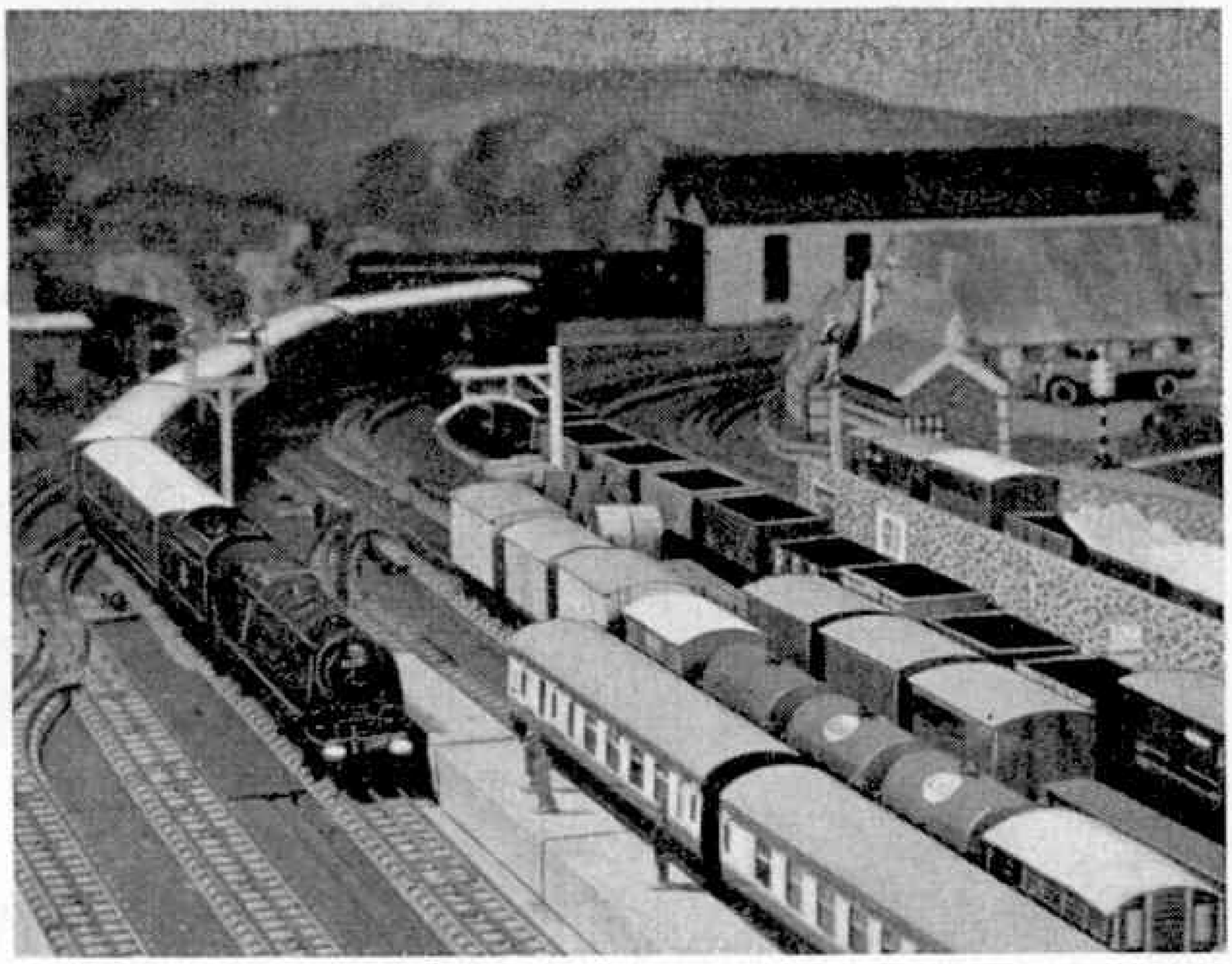
The railway is of special interest because there are two separate terminal stations on branches off the main track, which can be used continuously and includes two further stations. The layout therefore is an extensive one and full advantage has been taken of the space available to provide not only the track required for the different movements, but also to develop the lineside to an attractive extent. Similarly, there is plenty of accommodation for locomotives at two engine sheds and, as the pictures plainly show, there is ample siding accommodation for rolling stock.

The railway includes certain special features not often modelled because of the limitations of space. Among these are a coaling plant, a railway wagon works and similar structures. Another interesting feature is a triangular layout for the turning of main line tender engines.

The system is arranged on two tables running at right angles to one another. The tables themselves are not touching, but are connected for railway purposes by means of an imposing bridge made of Meccano Parts. On the main table, which is 10 ft. long, is the bulk of the layout and *Westbury*, one of the termini, *Crawford*, which is partly a terminal and partly a through station, and *Overton*, situated on the main line. *Overton* is in effect the junction station for *Westbury* and for the route leading over the bridge to *Newark*, which is on the smaller table.

Although the system is extensive it is essentially a "tidy" railway from the track layout point of view. Most of the sidings are long and are arranged parallel to one another. The only odd short lengths of dead-end track are found in connection with the triangle for locomotive turning, and for the accommodation of wagons serving the coaling plant.

Each of the "towns" served has its own particular industries and traffic, and this naturally has influenced the types of rolling stock in use and the runs they make. *Newark* is a seaport, where coal, timber, oil and steel scrap are among the originating traffics, as well as fish and frozen meat. At *Westbury*, at the other end of the



A boat train from "Newark" arrives at "Westbury" behind No. 46232 "Duchess of Montrose."

system, coke and oil products, steel plates, motor cars and electric cables are made. *Overton* is interested in the cattle trade and in brick production, while at *Crawford* the principal activities are centred round the *Whitley Wagon Works* to which, necessarily, pairs of wheels made in *Westbury* are carried by rail.

The wheels of course are Hornby-Dublo spares, a stock of which is maintained in case of renewals being required by any of the numerous wagon or coaching vehicles. Between *Overton* and *Crawford* is a tunnel and the *Newark* line passes through this.

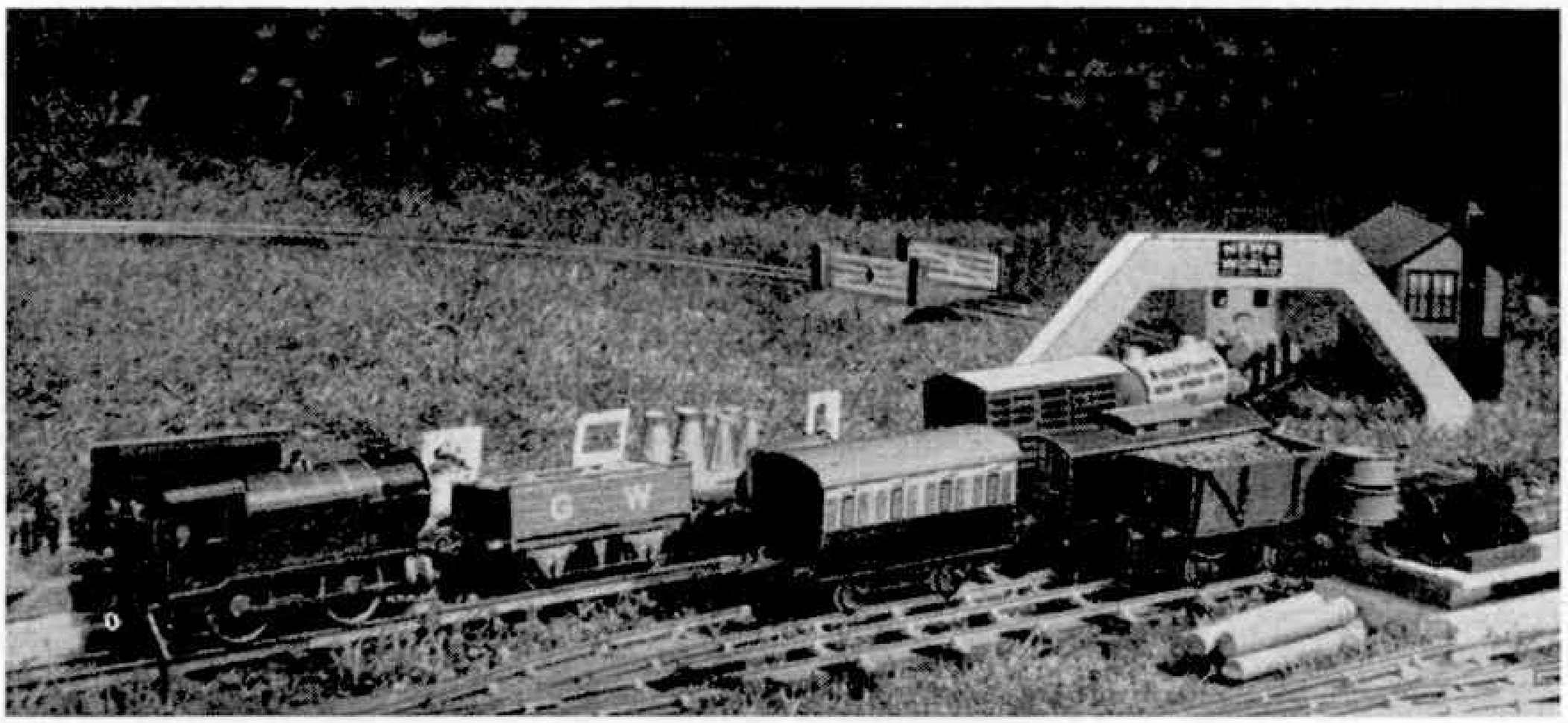
The straightforward layout achieved, in spite of the extensive nature of the railway, has allowed the control arrangements to be kept fairly simple. The *Westbury* "Control District" covers *Westbury* station and locomotive depot, the outer track of the continuous main line and the Wagon Works. *Newark* Control looks after the inner main line as well as its own branch, with the passenger station, goods and locomotive depots at *Newark*. There are of course several individual sections that can be isolated, as is very necessary when it is remembered that there are eight locomotives in service on the line.

All the engines are Hornby-Dublo, there being two of each type of main line Pacific, one of the imposing 2–6–4 Tanks and three of the useful 0–6–2 Tanks. One of the latter is the veteran of the line, for it was the original engine brought into service in 1940. It has had a major overhaul once and is still going strong!

There is a total of 25 coaches to work passenger traffic, which includes boat trains to and from *Newark*, and the usual express, local and parcels trains. The vans for the latter have been adapted from older bogie stock of former L.N.E.R. type.

To deal with the variety of freight traffic mentioned earlier there are in all 100 vehicles, including of course Goods Brake Vans, etc. Open wagons for coal and other traffic are plentiful, while the steel products of *Westbury* call for Well Wagons and Low-Sided Wagons. There are also plenty of Refrigerator Vans, Cattle Trucks and Tank Wagons.

Another part of the layout giving a realistic view of the track and the lineside effects.



How a Clockwork Railway Grew

THE Hornby Railway of which part is shown above is not really a permanent outdoor system. Actually the components were arranged outside in order to provide a pleasant setting for the photograph, but the result is encouraging and may suggest a pleasant outdoor occupation for fine days in summer.

The layout shown has been built up by *M.M.* reader Colin G. Maggs, who began with some earlier Hornby stock, and the components of one or two small train sets of various kinds. Then Colin really got going. He was quite young when he began railwaying—quite a usual thing, of course—and for some time was quite happy simply running an engine on the floor. Then came the time when a proper track was assembled, using Hornby material, and such obvious additions as a Station, Signal Cabin, Level Crossing and Buffer Stops made their appearance.

Above is shown part of the layout of M.M. reader Colin G. Maggs, of Bath. The railway has grown up in an interesting manner, as related on this page.

The next step forward came after some years of more or less elementary working. This was to build up a joint layout with the aid of the equipment belonging to a cousin. The idea proved so good that it was taken a stage further, when another combination of railways was formed with the help of a friend. On this system each partner used the engines and vehicles as common stock.

A certain amount of home construction then began and the loading of goods wagons started to be a regular practice. Timber and other items became regular traffic and to carry the former the base of an ancient tender was improvised into something like a timber wagon. As both owners had the same sort of engine, very successful double heading could be practised, which excited the partners greatly, and each period of working finished up with the running of a long train hauled by the two engines together.

During these sessions a continuous main line was in use with two sets of sidings, each managed by one of the operators. Loaded and empty trains were exchanged between the sidings in a realistic manner. With the track material available several different layouts were possible, but finally one or two well tried systems became the rule.

Then railway operating out of doors was tried, and the continuous main line adopted indoors became a single track end to end system, with a passing place about the centre. Trains were despatched from each end and were timed to cross one another at the intermediate station. This led to the development of timetable working and things worked out remarkably well after a certain amount of experiment.

In its usual form now the railway has a continuous main line again, with the sidings and goods roads correctly laid in a trailing direction. The trains shunt back into the sidings when required, as the train in the picture above is going to do.

Club and Branch News

WITH THE SECRETARY

THE OUTDOOR PROGRAMME

From now until the end of September the activities of Clubs and Branches in the United Kingdom will be mostly of an outdoor character—and there are hopes of a fine summer!

Those Clubs that have been in existence for several years will have found out by experience exactly which outdoor activities appeal most to their members, and therefore will be following a fairly well-established programme. Young, and smaller, Clubs—especially those not associated with a school—may find that the best they can do is to work on a "trial and error" basis until they have acquired the information needful to draw up a programme of all-round popularity, and they will find excellent suggestions in the Club booklet, copies of which will be sent to all interested.

Activities that should form the "backbone" of every Club's summer schedule include rambles, cycling runs —if there are sufficient members with cycles—cricket and other seasonable games, and, of course, occasional excursions to places of interest in the district.

* * * *

The Ilford and West Essex Model Railway Club are holding their first Exhibition this month. It will also mark the 25th Anniversary of the founding of the Club, and will be held on the 12th, 13th and 14th April at the Thompson Rooms, High Road, Ilford. On the first two dates it will be open in the evenings and on the 14th April from 11.0 o'clock in the morning.

This Club is not incorporated in the Hornby Railway Company, but I feel that members who can visit the Exhibition should be able to pick up some very useful tips.

CLUB NOTES

MILE END (PORTSMOUTH) M.C.—After several alterations and improvements the model submarine is almost completed. Plans are in hand for an Exhibition, and a Club party to which ex-members are being invited. A Club notice board has been installed. At a recent Social evening two members brought their violins and played a duet. Club roll: 30. *Secretary:* A. J. Nicholson, 213 Sultan Road, Buckland, Portsmouth.

LAUNCESTON M.C.—The second annual Exhibition attracted over 300 visitors and was a great success, the takings totalling about £7 14s. 0d. The very wide range of exhibits included a good display of Meccano models, a large Hornby-Dublo layout, model aircraft of all types, and displays of fretwork, stamps, miniature jet propelled cars, etc. *Secretary:* R. J. Keast, "Lytham", Dunheved Road, Launceston, Cornwall.

AUSTRALIA

MAYLANDS M.C.—Preparations for the long Christmas recess began with the winding up of model-building activities for the year, and table tennis tournament finals. The Session ended with a very successful party. Club roll: 43. *Leader:* Mr. V. Malmgreen, 6 Kennedy Street, Maylands, Western Australia.

INDIA

KOTA (RAJASTHAN) M.C.—The members of this electrically-minded Club have been busy making electric bells, an electric motor and a transformer. Club roll: 9. *Secretary:* Mr. Hari S. Chablani, House No. 4/300, Kota (Rajasthan), India.

BRANCH NEWS

ABBEYFIELD ROAD (SHEFFIELD)—The Branch layout has been mounted on a baseboard and the tracks screwed down, the whole then being attached to a large table. Recent additions to the layout include the new C3 Controller, and a double-arm electrically-operated signal. Members are invited to bring their locomotives along for running on the Branch layout. *Secretary:* R. North, 132 Abbeyfield Road, Sheffield 4.

LUMINA (LONDON)—New members will be welcomed. Senior members are constructing a model electric tube train. Meetings are well attended, and much Meccano and other model-building is in progress. A model laundry is being built. *Secretary:* K. Hill, 20 Larchfield House, Highbury New Park, London N.5.

HALE END (LONDON)—A very interesting visit was paid recently to the B.R. Midland Region depot at Willesden and to Old Oak Common shed on the Western Region. Many interesting locomotives were seen, and at Old Oak Common members were allowed to board the footplate of the *King George V* and to inspect the controls. After the outing a report was written for the local newspaper *The Guardian*, and part of this account was published. *Secretary:* A. L. Coe, 463 Hale End Road, Highams Park, London E.4.

Part of the extensive model aeroplane display at the recent very successful second annual Exhibition of the Launceston M.C. reported on this page. Mr. B. Tunbridge, B.Sc., one of the two joint Leaders, is seen pointing out one of the model aircraft to a group of keenly interested young visitors.

Among the Model-Builders

By "Spanner"

Edgard Lefevre, Brussels, is one of many Belgian Meccano boys who submit entries for M.M. Competitions. Edgard is only ten years of age and already his name has appeared in our prize lists.

Two-Speed and Reverse Gear-Box

The gear-box shown in Figs. 1 and 2 is simple in design and easy to assemble. It provides two forward speeds and a single reverse speed, and is suitable for use in quite small vehicles.

The framework for the gear-box housing consists of two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Double Angle Strips arranged with their lugs overlapping. A $1\frac{1}{2}''$ Flat Girder is bolted to each end of the frame by its slotted holes, and is adjusted so that $\frac{1}{2}''$ and $\frac{3}{4}''$ Pinions on the main shaft

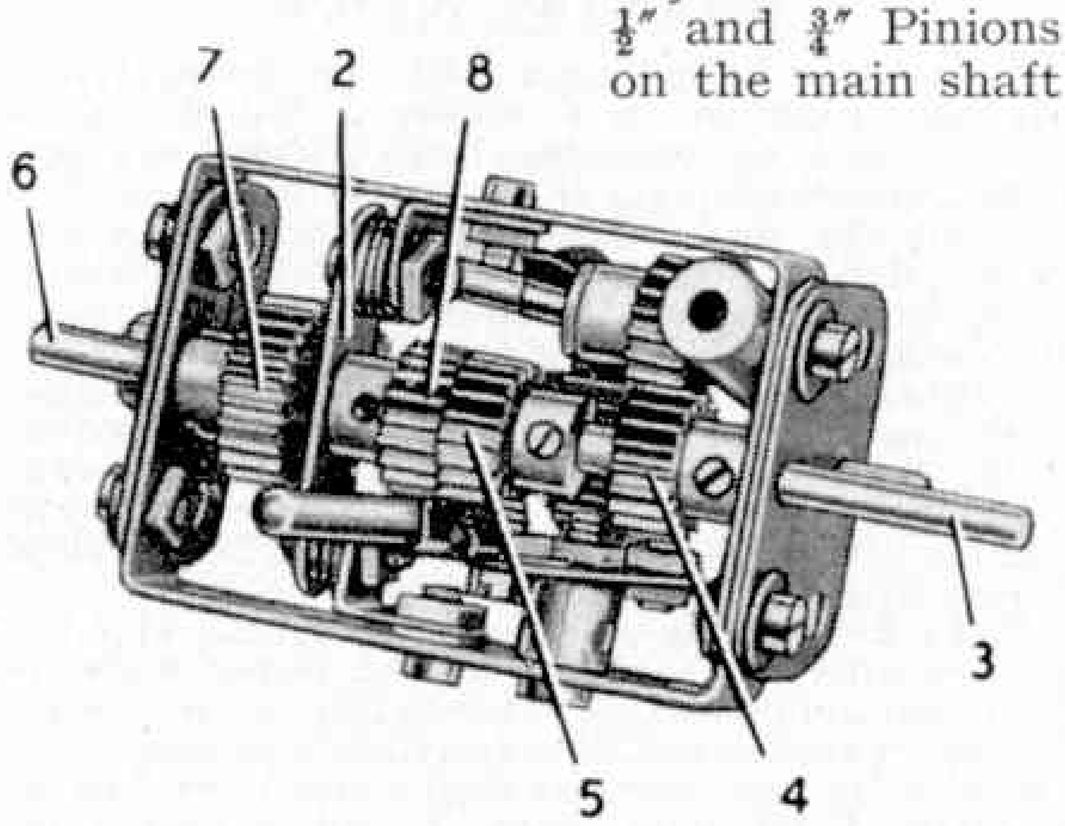


Fig. 1. A compact two-speed and reverse gear-box suitable for model vehicles.

and the layshaft will mesh accurately. At one end of the frame a bolt is screwed tightly into a centre threaded hole of a Coupling 1. A $1\frac{1}{2}''$ Strip 2 is spaced from two Angle Brackets by four Washers on each of the $\frac{3}{8}''$ Bolts that hold it in place. The Angle Brackets are fixed to the sides of the frame.

The driving shaft is numbered three in the illustrations and it carries two $\frac{1}{2}''$ Pinions 4 and 5, but it should be noted that it projects only halfway into the bore of Pinion 5. The output shaft 6 is mounted as shown and is fitted with a $\frac{3}{4}''$ Pinion 7 and a $\frac{1}{2}''$ Pinion 8. Rod 6 extends into the free portion of the bore of Pinion 5. The layshaft 9 carries a Collar 10, two Washers, a $\frac{3}{4}''$ Pinion 11, a $\frac{1}{2}''$ Pinion 12 and a second Collar. A reverse $\frac{1}{2}''$ Pinion 13 is mounted freely on a $1\frac{1}{2}''$ Rod fixed in the Coupling 1, and is held on the Rod by a Spring Clip.

The gear ratios are obtained by sliding the layshaft in its bearings. When the shaft is at the extreme right (Fig. 1), Pinion 11 meshes with Pinion 13, which is in constant mesh with Pinion 4. The Pinion 12 engages the Pinion 7, and so provides the reverse drive. When the layshaft is moved to the left (Fig. 2), Pinion 11 disengages Pinion 13 and neutral gear is obtained. Further movement of the layshaft to the left brings Pinion 11 into mesh with Pinion 5, but Pinion 12 still engages Pinion 7. This provides first or low gear. When the layshaft is moved to the extreme left Pinion 12 slides out of mesh with Pinion 7 and Pinion 11 engages both the Pinions 5 and 8. Thus a direct drive is obtained to give top or high gear.

The sliding movement of the layshaft is controlled by a Rod held in a Rod and Strip Connector bolted to a Double Arm Crank. The Double Arm Crank is held by a nut on a Pivot Bolt in one side of the frame. A $\frac{3}{8}''$ Bolt in the free arm of the Double Arm Crank engages between the Collar 10 and the Washers placed next to Pinion 11.

Meccano Helps a Convalescent

Convalescing from an illness which had incapacitated him for many months, Mr. F. Needle, Watford, found that time passed all too slowly. Reading he found difficult, due no doubt to the fact that

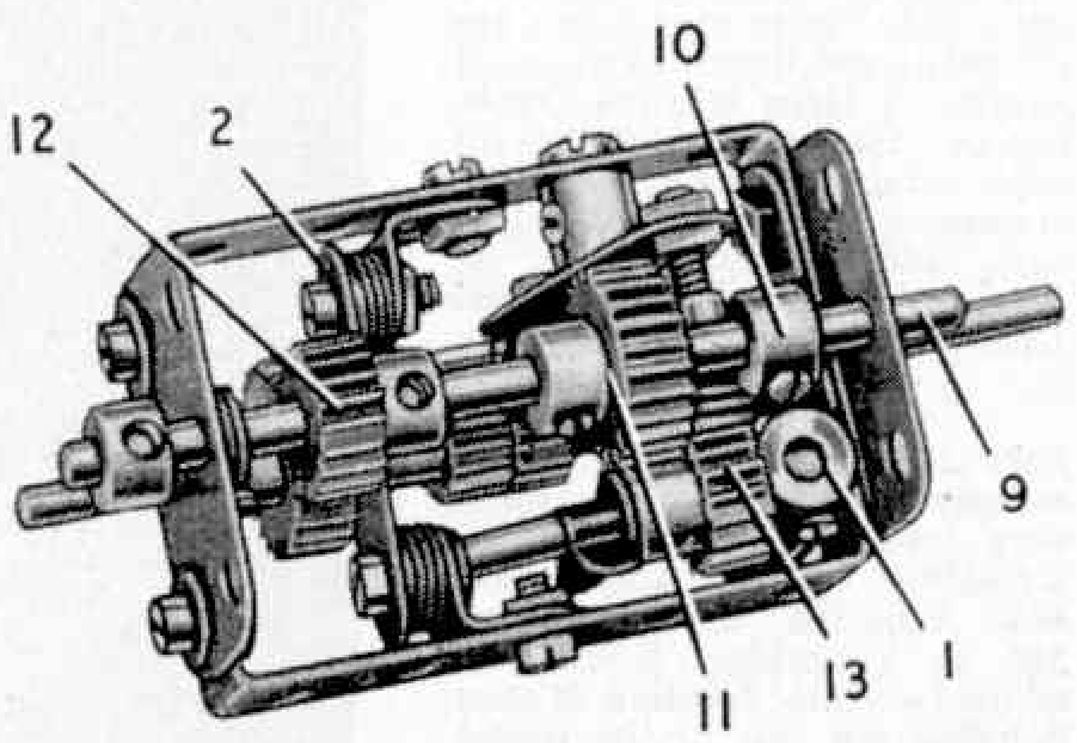
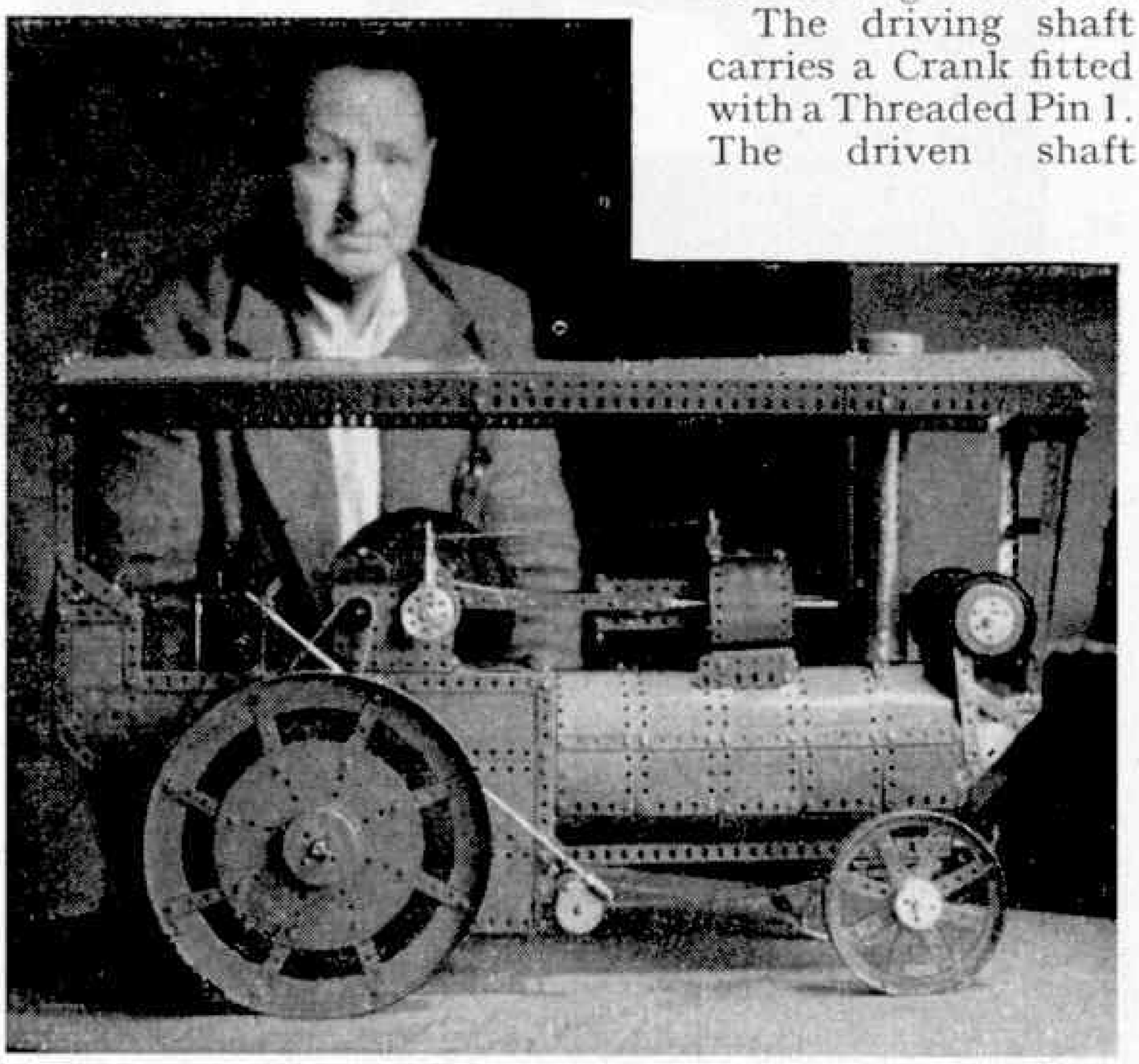


Fig 2. An underneath view of the gear-box showing the sliding layshaft and the reverse pinion.

because of his long illness his eyes were not equal to the strain. One hobby of his, gardening, was entirely out of the question. Moreover, he found that his fingers had not their former flexibility.

Then he remembered that the Meccano set his son used to play with as a boy was still at home, neatly contained in the cabinet he had made for it years ago. Slowly, at first, and with some difficulty because of his unco-operative finger joints, he assembled a few of the more simple models. He realised that he had at last found a hobby that could make the days of recovery less tedious, and he soon progressed to models of a more elaborate type.

In the illustration at the top of this page he is seen with a fine model Traction Engine he built. The illustration is reproduced from a photograph taken by Mr. E. R. McNaughton, Watford. The Traction Engine is complete in every detail and is a faithful reproduction of the model described in Special Instructions Leaflet No. 15. The model is complete with electric motor, which sets the engine slowly and realistically in motion, and the front wheels can be steered from the steering wheel on the driver's platform.



Mr. F. Needle, Watford, with a fine Showman's Traction Engine, one of many models he built while convalescing after a long illness.

Assembling Meccano has restored Mr. Needle's fingers to their former usefulness, and has helped considerably in his recuperation.

Intermittent Drive

Fig. 3 illustrates an unusual form of intermittent drive that makes use of a five-starred wheel built up from Threaded Pins. The arrangement gives a fifth of a revolution of the driven shaft for each complete revolution of the driving shaft. Used in conjunction with a 2:1 gear ratio it will provide a total ratio of 10:1 suitable for revolution counters and calculating machines.

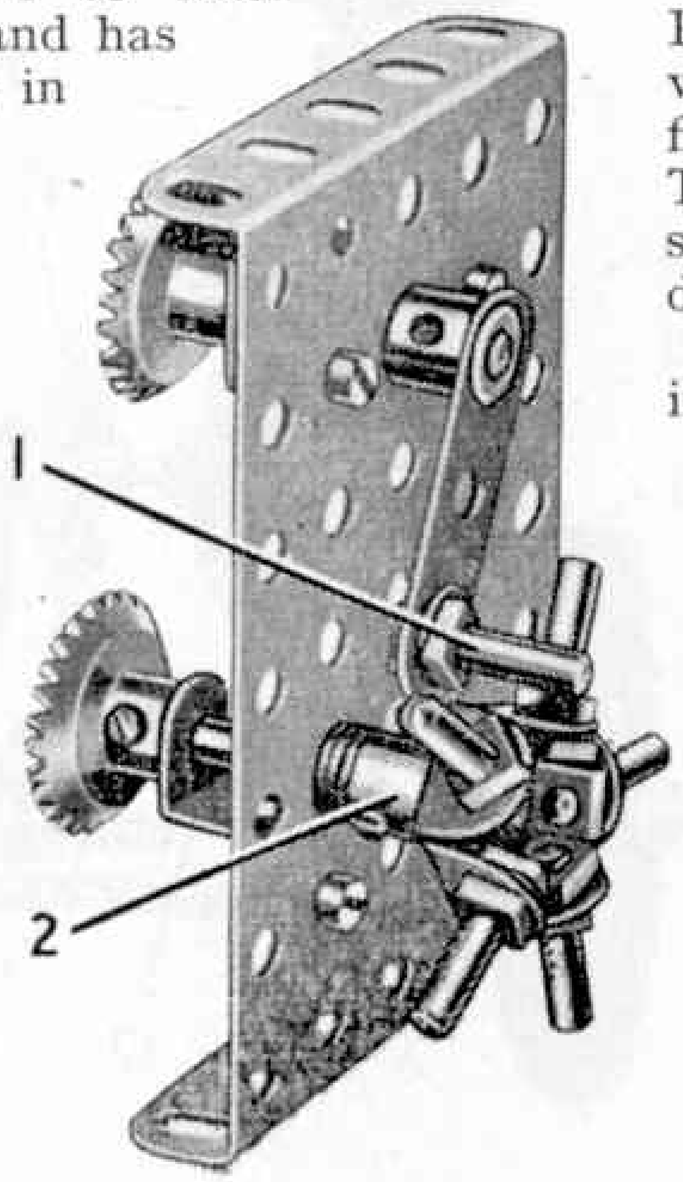
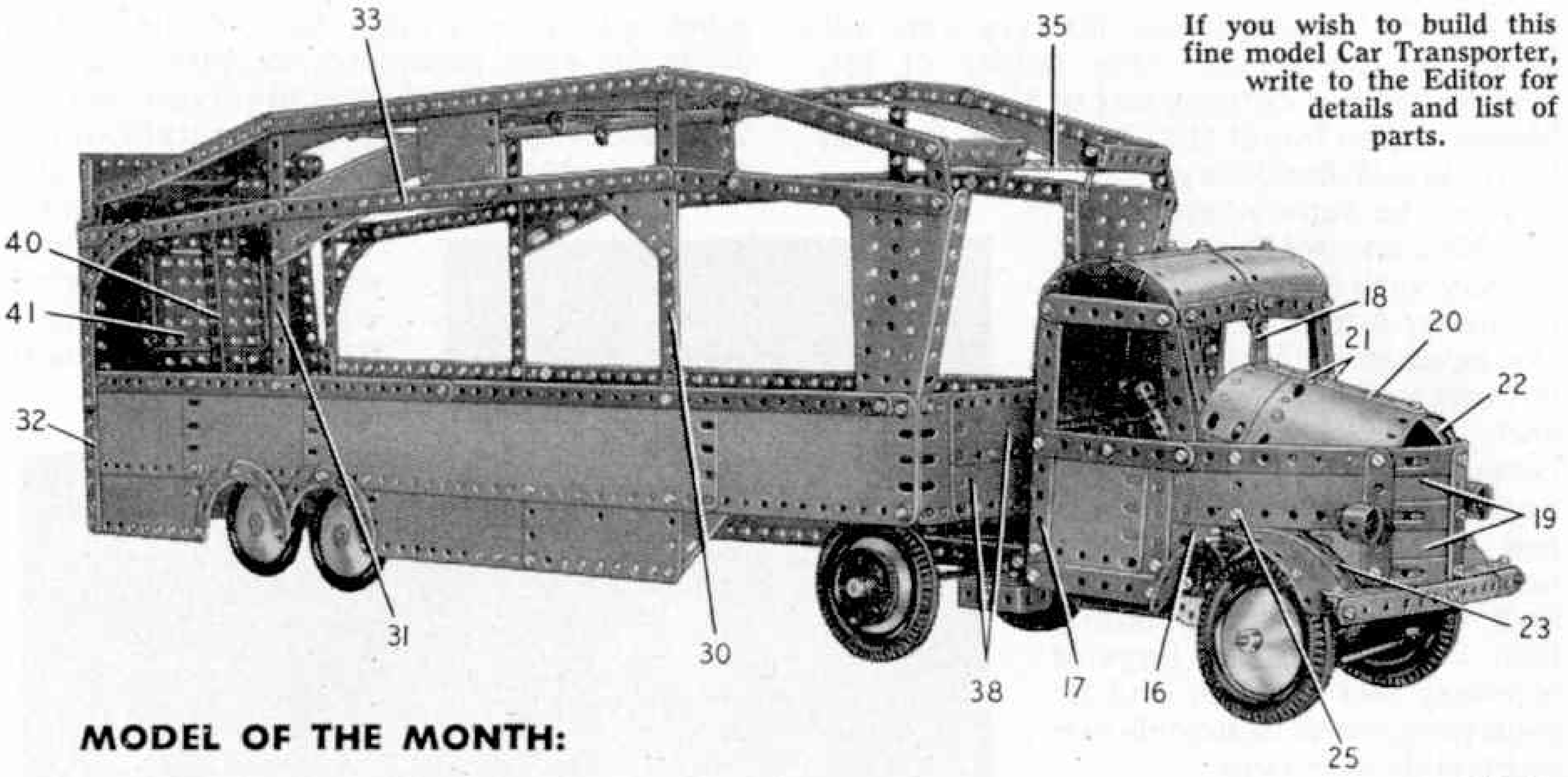


Fig. 3. An intermittent drive mechanism that makes use of a star wheel of unusual design.

The driving shaft carries a Crank fitted with a Threaded Pin 1. The driven shaft supports a Rod Socket 2, on the shank of which five Angle Brackets are fixed by a nut. A Threaded Pin is held by its nut in each Angle Bracket, to make a star wheel with five spokes.

As the driving shaft rotates the Threaded Pin 1 engages one of the spokes of the star wheel and moves this wheel through one fifth of a revolution. The position of the Threaded Pin 1 should be adjusted in the slotted hole of the Crank until a smooth drive is obtained.

If the mechanism is required for use in a revolution counter or in a similar machine in which a 10:1 ratio is necessary, a $\frac{3}{4}$" Pinion should be fixed on the same Rod as the star wheel. This Pinion should be arranged to mesh with a 50-tooth Gear on the output shaft, and will provide a 2:1 reduction ratio. As a result of this arrangement the total ratio between the Rod carrying the Crank and the output shaft will be 10:1, and for each complete turn of the driving shaft and its Crank the output shaft will rotate one tenth of a revolution.



If you wish to build this fine model Car Transporter, write to the Editor for details and list of parts.

Fig. 1.

MODEL OF THE MONTH:

Car Transporter

THINGS that run on wheels are among the most popular of all subjects for Meccano model-builders, so the model we have chosen for the April Model of the Month is one that is sure to appeal to practically every Meccano enthusiast.

Nowadays vehicles tend to be more specialised in their uses than was the case previously, and there are many examples of vehicles designed specially for carrying loads of particular kinds. Our model is based on one of these specialised vehicles that is exceptionally interesting in design and operation. It is a car transporter, and model-builders who are also Dinky Toys enthusiasts will be familiar already with this vehicle, for an attractive miniature is included in the range of Dinky Toys.

Since the war, manufacturers in the United Kingdom have been asked to export more and more of their products, and the motor car industry has been outstandingly successful in this respect. The volume of car exports has risen continually, despite ever increasing competition from other countries, and readers living near seaports must be familiar with the sight of new cars in special protective finishes heading for the docks. Sometimes these new cars are driven under their own power, but very often they are loaded in groups on special transporters that carry them speedily and economically to their destination.

Our model is based on a typical car transporter designed to carry a load of up to four cars. It is an articulated vehicle, that is, the prime mover or tractor is not provided with a fixed loading platform. Instead the load carrier is a special semi-trailer with wheels at the rear end only. This is pivotally attached to the

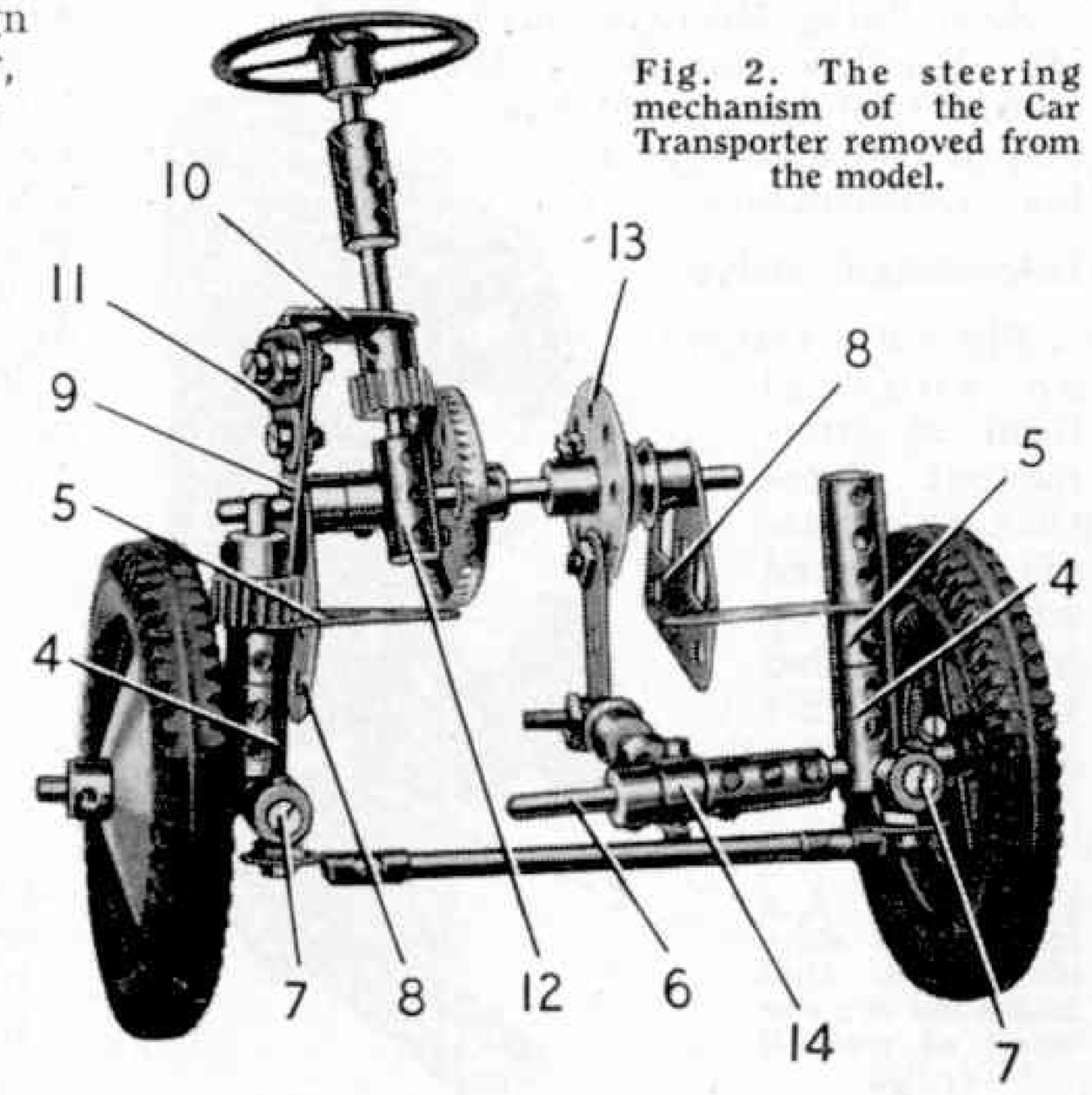
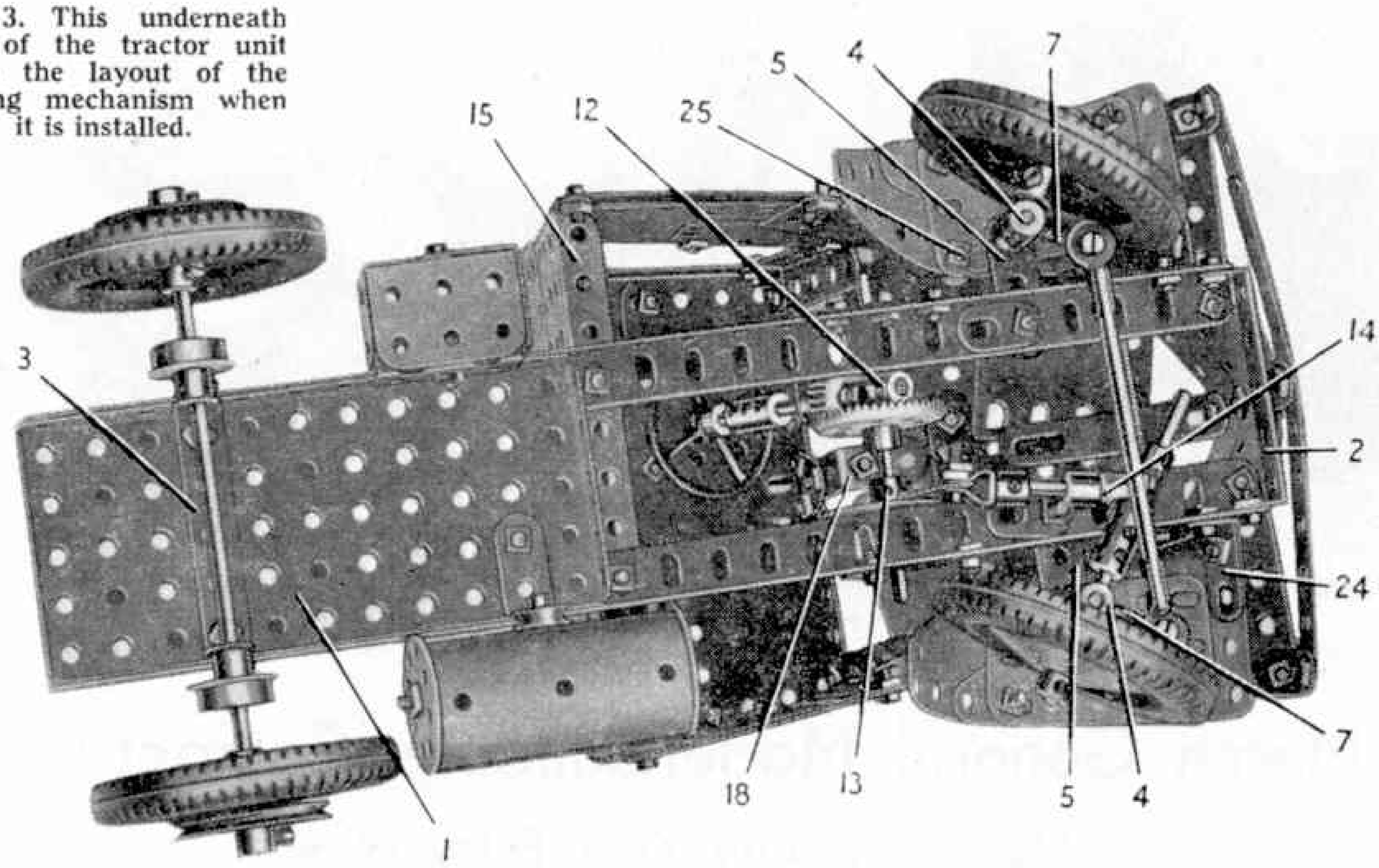


Fig. 2. The steering mechanism of the Car Transporter removed from the model.

Fig. 3. This underneath view of the tractor unit shows the layout of the steering mechanism when it is installed.



chassis of the tractor so that the complete vehicle is readily manœuvrable.

The semi-trailer has two load platforms or decks, placed one above the other. A hinged ramp is attached to the lower deck, and when this ramp is lowered two cars can be driven up it on to the deck, where they are clamped in position. The upper deck also is designed to carry two cars, but it is not provided with a self-contained loading ramp as in the case of the lower deck. Instead the vehicle can be backed up to a special loading platform of the correct height, or the cars can be hoisted in place by means of cranes. On arrival at the unloading point cranes are usually available if necessary to remove the cars.

The Meccano model is designed for construction with a No. 8 Outfit, and it follows the design of the real vehicle as closely as possible. Detailed instructions are not included in these pages. Meccano enthusiasts who wish to build the model should write to the Editor for full constructional details and a list of the parts required.

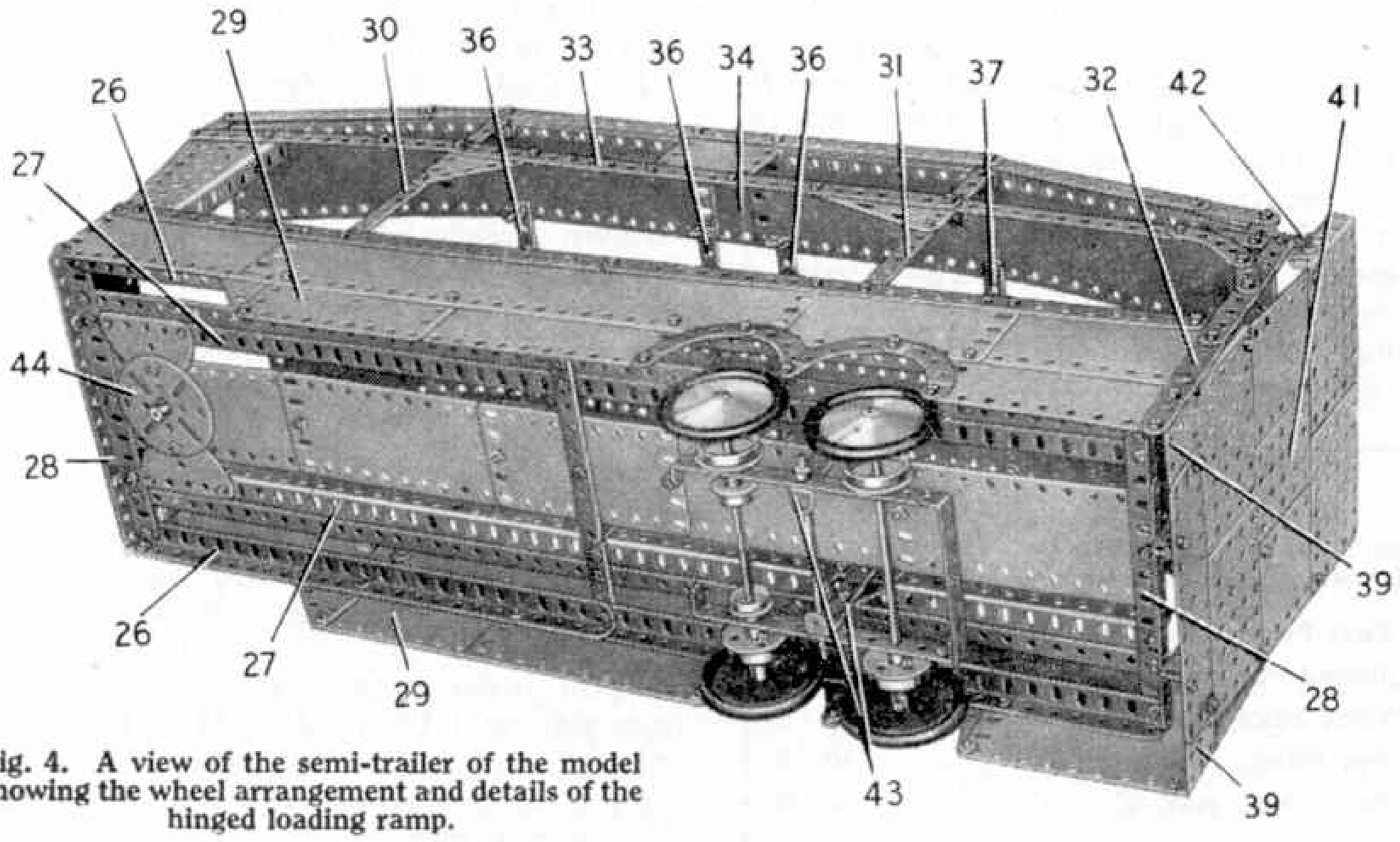
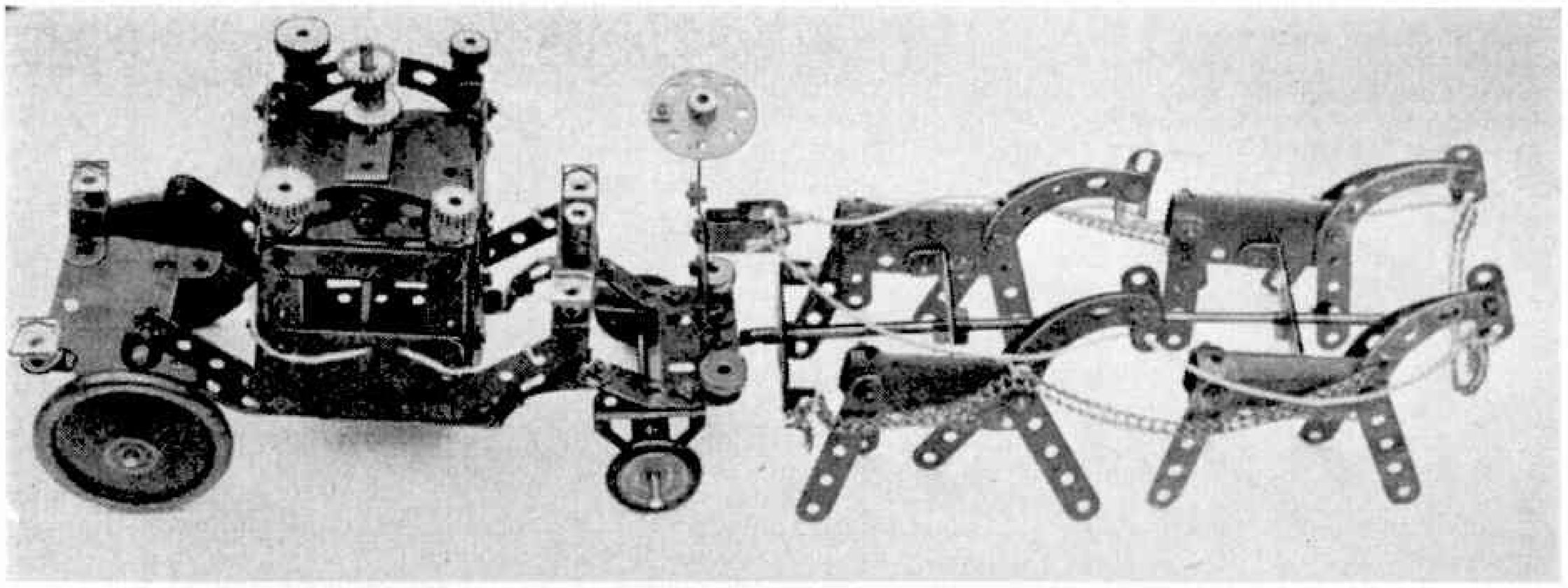


Fig. 4. A view of the semi-trailer of the model showing the wheel arrangement and details of the hinged loading ramp.



A realistic model of a State Coach and Horses. It was built by Desmond Buckingham, Torpoint, Cornwall, as an entry for a Meccano Competition.

March General Model-Building Competition

Start Preparing Your Entry Now!

THE model-building competition announced in last month's *M.M.* is open for entries until 31st May next, and there is still plenty of time to build a model for this contest and send details of it along. The competition is one of the popular general model-building type, in which you can build any model you like and use just what Meccano parts you wish in building it. Every owner of a Meccano Outfit can send in an entry, no matter what the size of his Outfit or in what part of the world he lives.

Following our usual practice, there are two Sections in this contest. Section A is for model-builders who are under 14 years of age on 31st May 1956, and Section B, for competitors who will be 14 or over on 31st May 1956. A fine set of Cash Prizes will be awarded for the best models submitted in each Section, and full details of these Prizes are given in the panel at the foot of this page.

Although each competitor can use as many parts as he likes to build his model, it is well worth paying particular attention to the choice of a suitable subject before starting construction. You should choose a subject that is well within the scope of the range of parts you have available, so that you can build a neat, sturdy and well-designed model. The judges will look for these points when they are selecting the prizewinners, and mere size alone will not gain an award.

Cranes, ships, aeroplanes and vehicles of all kinds make suitable subjects for models entered in this competition, but if possible you should try to find an original subject for your model or build a novel variation of one of the more usual types of models. The judges will look out for novelty as well as for model-building skill, and other things being equal, preference will be given to competitors who have shown originality in the choice of their subjects.

Entries must be addressed *March General Model-Building Competition, Meccano Ltd., Binns Road, Liverpool 13*, and must be posted to reach us not later than 31st May next. *The actual models must not be sent.* All we require are photographs or sketches of the models. But don't forget to write your name and address clearly on the back of each print or drawing submitted.

You must make sure also to give the age you will be on 31st May 1956, as the judges will make full allowance for the age of each competitor when they examine his or her entry.

THE PRIZES

The following prizes will be awarded in each of the Sections A and B.

	£	s.	d.
First Prize, Cheque for	4	4	0
Second Prize, Cheque for	2	2	0
Third Prize, Cheque for	1	1	0
Ten Prizes, each of		10	0
Ten Prizes, each of		5	0

BOOKS TO READ

Here we review books of interest and of use to readers of the M.M. With certain exceptions, which will be indicated, these should be ordered through a bookseller.

THE MODERN CAR EASY GUIDE SERIES

(Temple Press Ltd. 2/– each)

There are five booklets in this series. The first one explains how a car works, the second deals with the care to be taken of it and the third is concerned with simple repairs. The electrical parts of a car and carburettors are the subjects of the remaining parts. Each is written by an expert who has practical knowledge of the subject and also a good appreciation of the requirements of the ordinary owner.

This latter is a very important matter indeed in these days of "family" cars, when much can be done by owners to ensure that the cars they run are always in good order. A car cannot be fully maintained in this way, of course, and the services of experts must be called for in certain matters, but there is plenty of scope for the owner himself, who will get real pleasure and gratification out of anything he can do.

Each of the hand-books has an introduction by F. J. Findon, A.M.I.Struct.E., Editor of *The Light Car*, who emphasises the fact that their mission is to act as easy guides to the modern car, especially for the beginner. Fine points of design are not discussed, but any motorist who has given attention to the contents of the hand-books will be a better driver, even if he does not attempt to put into practice more than a small proportion of the practical operations described in them. There are many excellent line illustrations that really do help to make clear the subject matter of the various sections, and the series can be well recommended.

"THE NORTH BRITISH RAILWAY"

By C. Hamilton Ellis (Ian Allan, 25/–)

The North British Railway was the largest railway in Scotland and the fifth largest of British systems before the grouping of 1923. Its trains ran over the Forth and Tay Bridges, as the coach roof boards used to tell us, and it penetrated into England to a certain extent, while it could also boast the most westerly station in Great Britain, that at Arisaig.

After an agreeable first chapter introducing us to the railway and its early days, the author deals with the Edinburgh and Glasgow Railway, the first company to open a real main line in Scotland, and the Edinburgh, Perth and Dundee Railway, the two that formed its beginnings. The ancient works at Cowlairs built in 1841 for the first of these two lines have a chapter to themselves, as they deserve. After what the author terms the mechanical middle ages, locomotive development there settled down to a well-ordered programme under Dugald Drummond, an autocrat whose engines, of a stamp all their own, were to become well known not only on the North British, but on the Caledonian and on the London and South Western Railways as well. Later Drummond has a chapter all to himself and in the course of this the author deals engagingly with the colour of North British engines, which in descriptions and in prints has puzzled many enthusiasts not fortunate enough to have seen them in North British days.

The book gives close attention to N.B. rolling stock, trains and locomotives, including a fitting appreciation of the stately Atlantics that were numbered among the locomotive giants of the earlier years of this century. North British engines had names, very fine ones too, in latter days, so that Glens and Scotts necessarily have their place in the story, and we are reminded that the old N.B., whatever its shortcomings, did have the first sleeping car in regular service in Great Britain.

The two great bridges of course are given special attention, though most of the story of the Tay crossing is concerned with the first bridge, the tragic disaster to which is well treated. The N.B. was fated to see disasters that provided talking points for years afterwards, for the Elliot Junction collision of 1906 created almost as much concern as the fall of the first Tay Bridge.

There is certainly plenty of interest in the North British, and Mr. Ellis, who knew the line well in its heyday, has described it in his customary pleasant style. He does justice to its fine qualities as a railway, and does not make too much of the romantic side that has been cultivated by the association of the names of its chief station, Waverley in Edinburgh, and of many of its fine locomotives with the world of Scott.

There are several sections of well-reproduced illustrations, mostly from photographs, though sketches by the author occupy odd spaces here and there, and the frontispiece in colour shows North British trains at Crianlarich just 50 years ago.

"KNOW YOUR AIRLINERS"

(Shell-Mex and B.P. Ltd., 2/6)

London Airport, opened by H.M. the Queen last December, was described by John W. R. Taylor in the *M.M.* of August last. Readers who live in the vicinity of this great hub of international air traffic, or who may be able to visit it some day, will find this neat handbook by Mr. Taylor a valuable guide in identifying the many and varied airliners that they will observe there. Other readers also will delight in this booklet, which is claimed as the first of its kind to illustrate in full colour all the leading types of airliners using British airports. There are also descriptive notes and recognition silhouettes of these aircraft, and the badges of all the international passenger airlines serving this country are shown in colour. It is not out of place that coloured illustrations of the different types of aviation service vehicles employed by Shell-Mex and B.P. Ltd. in servicing aircraft at our airports, also are included.

The booklet is published for Shell-Mex and B.P. Ltd. by Perry Colour Books Ltd., and can be obtained from any bookshop or bookstall. It is *not* obtainable from Shell-Mex and B.P. Ltd.

"ABC BRITISH CARS"

By John Dudley
(Ian Allan, 2/6)

This survey of the numerous products of the British motor industry lists and gives details of current models of 30 different makes of cars. It includes the interesting additions to that range that have been made since the previous edition of this booklet, and each new model is indicated by an asterisk.

As always in this series, the many half-tone illustrations are excellent.

"CONSTRUCTION FOR AEROMODELLERS"

(Model Aeronautical Press, price 5/–)

This excellent handbook for the beginner in aeromodelling starts with chapters on the tools and materials that he will need, and goes on to explain the construction of simple and advanced fuselages, wings, tailplanes, undercarriages and propellers. Later chapters cover such important matters as dethermalisers—with which one can limit the distance that model aircraft in flight will drift—auto-rudders for gliders, rubber motors and miniature aero engines. In every case the instructions are simply and clearly given.

There are many sectional line drawings and half-tone illustrations to further help the young aeromodeller.

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For other Stamp Advertisements see also pages 220 and xviii

Stamp Collectors' Corner

By F. E. Metcalfe

THE GEORGE CROSS ISLE

THE new set of postage stamps for Malta has a special significance in view of the possible change in the Island's political status in the not too distant future. So it behoves collectors to make sure that they get these stamps, for they may only have a short life. Also, with Malta so much in the news, it might be worth our while to consider the philatelic history of what was one of the most popular countries with collectors, until it made the mistake of overdoing things by bringing out more stamps than collectors were willing to take up. But I'll refer in detail to all that later on.

Nowadays many collectors are interested in philatelic history, and these will have gone after copies of British stamps, bearing the Malta postmark, that have the obliteration A25. If you come across any of the early Victorian stamps of Great Britain with this A25, although it says nothing about Malta, you will know that it was used there, and is thus a nice stamp to have. Gibbons list a number of these and price them at anything from 5/– to £50. Poor copies with smudgy postmarks are worth less than the catalogue denotes, but copies on cover with a clear cancellation might even bring above catalogue price.

Leaving these British used abroad, as they are generally termed, we come to the first postage stamp issued expressly for the colony. De La Rues were the printers, and it was of the modest face value of a halfpenny. But there the modesty ends, for specialists have been to work, and stamps printed on blued paper are catalogued £20 mint and £22 used, while the white paper varieties range from £4 to £10 There are even imperforate specimens of the blued paper stamp, and these are listed at £200 mint.

I am always amused at the comments we hear from time to time about the shades of modern stamps. Those interested in the older issues have quite a lot to say about these. They are supposed to be made for collectors, etc. Yet compared with the prices asked for some of the old shade varieties, those for modern varieties are insignificant. One for Ceylon is actually catalogued at £300, against £6 for the same stamp in a different shade, and other almost equally ludicrous examples could be cited.

Malta rang the changes with the ½d. stamp bearing Queen Victoria's head for over 20 years, an extraordinary performance. There were a number of printings, and all conceivable shades of buff and orange. The first printing was on paper without watermark, but in 1863 paper with the Crown CC watermark was used. And although the cheapest variety of this ubiquitous ½d. stamp is catalogued at 25/–. copies can be obtained at very much less. But some of the copies are very shabby and dirty, owing to the light colour of the stamp, and unless you go in for a bright clean specimen, your collection will start off on the wrong foot as it were, and as a result will always look poor.

In 1885 Malta went in for a set of six stamps from ½d. to 1/– and this has been increased in the catalogue to ten, with shades. But if collectors get a good copy of each value, they can make quite a nice set, particularly if they can add a copy of the big 5/– value, issued in 1886, showing the Queen's head in the Maltese Cross. Again care must be taken to get a clean copy, for there are a lot of poor ones about that may tempt a collector into buying, because offered at a big reduction off catalogue.

Malta broke away from the Queen's heads in 1899, when four very attractive stamps were issued. The designs were: 4½d., a Gozo fishing boat; 6d., an ancient Maltese galley; 2/6, the figure of Malta (rather looking like Britannia); and 10/–, Shipwreck of St. Paul, a really handsome stamp. Incidentally, Malta is a devoutly Catholic country and religious motifs figure prominently among the designs of her stamps.

A delightful ½d. stamp appeared in 1901 showing Valletta Harbour. Apart from a 1d. provisional, there was nothing after this until we got the King Edward VII heads, in 1903, to be followed in 1914 by stamps bearing the likeness of King George V. More of the latter in 1921, and then in 1922 came the first stamps overprinted *Self-Government*. There followed another farthing stamp (overprinted) in 1922, and then came the deluge I have already mentioned—a set of rather large stamps, provisionals, the 1922 set to 10/– overprinted *Postage*, a pictorial set in 1926, the same overprinted *Postage* in 1926, overprinted *Air Mail*, and overprinted *Postage and Revenue*. These were long sets, don't forget, to 10/–, and all this from a country that made do with a ½d. stamp for 20 years, when it first issued its own stamp.

An awful lot of speculation had been going on with all these issues. Prices rocketed and then plummeted, and it was only when the first K.G. VI set appeared in 1938 that some of the lost popularity returned to Malta's stamps.

And this is where I think that Malta should be taken up by young collectors, or those who do not wish to spend too much on a collection of a single country. The 1938 set was *(Continued on page 194)*

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Stamp Gossip

ALBUMS AND CATALOGUES

SOME time ago I warned collectors to buy their stamp albums, for prices were sure to go up. Lately I have had one or two letters from readers complaining about these price increases, and one mentioned a certain make of album that sold for 5/– before the war and now costs into the teens of shillings. All that is only too true, and the explanation is that few things have increased to such a degree as paper and printing costs. Anyhow, there is one consolation. Albums made in Britain are back to their pre-war quality, which means that once more they are the finest in the world.

Catalogues of course have increased also in price, but I know first hand what little profit is made by the publishers of Commonwealth Catalogues, and Gibbons' Simplified, for the thematic collector, is a marvel of cheapness. So after all, stamp collectors have not much to complain about really, as far as publications on their hobby are concerned.

AUSTRALIAN OLYMPIC GAMES

As most will know, the next Olympic Games are to be held in Australia later in the year. But one reader is puzzled over an Australian Olympic Games stamp he possesses. He writes "I have got a 2/– stamp of Australia, with the five ring symbol, that according to my Commonwealth catalogue should be deep blue. But my copy is green. Is this a rare error, please?"

This is not the case. What our friend has is a copy of the second Olympic Games Publicity stamp that has been issued. The first one came out in December 1954, and it was deep blue, as the Commonwealth Catalogue says. But there was a re-issue in green in November 1955. Incidentally, although over two millions of each colour were sold, many of these will be lost to collectors, through being used on commercial mail.

PAKISTAN

I have previously referred to the very beautiful stamps that are being issued by Pakistan. This is a joint effort of Britain and Pakistan, for Messrs. De La Rue are behind the printing of the stamps, and the stamp illustrated is one of a set of three, sent by our good friend Mr. E. R. Kooka, that was issued 7th December to commemorate the unification of West Pakistan.

The stamps are all of the same design, and are beautifully engraved. Moreover, there are enough to go round, which was not the case when the "U.N." pair was issued recently. Then there was a shortage of the 1½a. value and collectors were annoyed. And rightly so, for if stamps are to be issued to commemorate interesting events there should be plenty for all.

ICE HOCKEY

This sport of hard knocks, and at times rather frayed tempers when the big teams meet, is particularly popular in Canada, where it has been brought to near perfection. So it is only meet that Canada should issue a stamp in the sport's honour, which was done on 23rd January. It is well up to Canada's usual high standard, and will be one of the most popular of those issued during 1956.

We can expect more new stamps from Canada during 1956, for this month we shall have two "Wild Animal" stamps, and later on there will be a new 25c. stamp to stress the importance of the chemical industry, a replacement of the present 20c. stamp—that with the Wigwam, which has never quite pleased the critics—and one with a design from the paper pulp industry. I shall look forward to all these new stamps, as will hordes of other collectors.

ANTARCTICA

I suppose that no recent activity has raised more interest amongst Magazine readers than the Trans-Antarctic Expedition, and that surely applies also to the set of stamps of Falkland Island Dependencies that were overprinted for the use of the members of the venture. There was a publicity purpose too, to which stamp collectors can be depended upon to respond, for thousands of sets will be bought and shown to all and sundry.

The set will probably remain on sale for some time, but you had better get yours while they can be obtained at current rates, for you never know!

ROYAL VISIT

And here is another stamp much in the eye. It is overprinted to commemorate the Queen's visit to Nigeria. So many have been bought that they are never likely to be scarce, but who would begrudge a copper or two for such an interesting memento?

THE MONTH'S TIP

Collectors sometimes write to tell me that they do not collect for profit, but like a bargain now and again. That is why I try to give them a tip each month.

For this month I suggest that mint and used copies of the Australian Olympic Games Publicity stamp 2/–, green, will improve quite a bit in value later on, compared with today's price. Many people were annoyed that the stamp was issued at all, and did not bother to buy it when current.

Model Railway enthusiasts of all ages are here seen keenly interested in the operation of one of the several fine Hornby-Dublo layouts that were a striking feature of the Third Annual Exhibition of the Droylsden County Secondary School H.R.C. Branch No. 555, held last December.

Project to Production—*(Continued from page 178)*

and de-pressurised continuously, to simulate in a few weeks or months the stresses involved in years of airline flying at heights up to 30,000 ft.

Even when the first Vanguard flies, it will still be two years before it enters passenger service. During that time, with its sisters, it will prove in the skies the accuracy of the thousands of hours of calculation, and structure and wind tunnel testing. Hundreds of small changes may be made to its design, each contributing something to make the aircraft stronger, more easy to fly or more comfortable to fly in.

Only when Vickers are completely confident that it is as good as it could possibly be, and when B.E.A. are satisfied with its performance, will Vanguards begin to roll off assembly lines like those in our cover picture, destined for service with the airlines of the world. They will then cost about £750,000 each.

Each powered by four 4,470 h.p. Rolls-Royce R.B.109 Tyne turboprops, they will carry 76-105 passengers at well over 400 m p.h. for any distance from 200 to 2,500 miles. It is no coincidence that the latter is the coast-to-coast distance across the United States, for the Vanguard should prove as much a world-beater as its smaller team-mate, the Viscount.

New Cunarders—*(Continued from page 183)*

Despite rough weather she cut nearly two days off the time of the older ships on this service.

On 14th December 1954 the *Ivernia* was launched by Mrs. Howe, wife of a member of the Canadian Government. The liner completed her acceptance trials on 16th June 1955, but was then laid up in the Gareloch owing to the dock strike at Liverpool and made her maiden voyage to Canada on 1st July, from the Clyde. She has since visited her birthplace on several occasions, as a call at the Clyde is included in certain of the Liverpool runs.

The *Carinthia* was launched on 14th December last by H.R.H. Princess Margaret. Despite a strong wind and heavy rain, the great hull took the water perfectly and within half an hour had been safely berthed in the fitting out basin by the tugs *Cruiser*, *Chieftain*, *Strongbow*, *Battleaxe* and *Warrior*.

The *Carinthia*, the 47th Cunarder built by Brown's, is expected to make her maiden voyage from Liverpool on 27th June next. Although outwardly similar to her sisters, an entirely different scheme of decoration has been adopted inboard and an innovation is a soda fountain.

The final member of the quartet, the *Sylvania*, will be launched in 1957.

With this 90,000 ton building programme the Cunard Company is demonstrating in no uncertain fashion its faith in the future of Canada.

Easy Model-Building—*(Continued from page 201)*

to Rod 9 should be taken over Pulleys 13 and 12 and a small Loaded Hook is then fastened to it. An operating handle for Rod 9 can be provided by a $\frac{3}{8}$" Bolt in a Bush Wheel fixed to one end of the Rod.

Parts required to build the Mobile Crane: 4 of No. 1; 8 of No. 2; 2 of No. 3; 8 of No. 5; 4 of No. 10; 2 of No. 11; 8 of No. 12; 4 of No. 12c; 2 of No. 15b; 1 of No. 16; 1 of No. 17; 1 of No. 18a; 2 of No. 19b; 1 of No. 19g; 2 of No. 22; 1 of No. 23; 1 of No. 24; 8 of No. 35; 86 of No. 37a; 81 of No. 37b; 8 of No. 38; 1 of No. 40; 1 of No. 44; 1 of No. 48; 4 of No. 48a; 1 of No. 51; 1 of No. 52; 1 of No. 54; 1 of No. 57c; 2 of No. 90a; 4 of No. 111c; 2 of No. 125; 2 of No. 126; 2 of No. 126a; 1 of No. 142c; 4 of No. 187; 2 of No. 188; 2 of No. 189; 2 of No. 190; 1 of No. 191; 2 of No. 192; 1 of No. 198; 2 of No. 199; 1 of No. 200; 2 of No. 214; 4 of No. 215; 4 of 221.

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From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

An Unusual Signpost

In a lane a few miles from the village of Tandridge, in Surrey, there is a signpost reading "Hastings (Via Panama) 11,564 miles." This stands at the entrance to a drive leading to a large house. The Hastings to which it refers is not the famous seaside resort, but the town in New Zealand.

The signpost was erected by the owner of the house. He used to live at Hastings in New Zealand and a signpost there showed the distance to Piccadilly Circus. When he came to live in England he decided to return the compliment.

His signpost was one of the very few that was allowed to remain throughout the last war. Apparently the authorities thought there was no harm in showing any German invaders the way to New Zealand!

COURTNEY DAINTON (Godalming).

A signpost in a Surrey lane. Photograph by Courtney Dainton, Godalming.

The Harwich-Zeebrugge Train Ferry

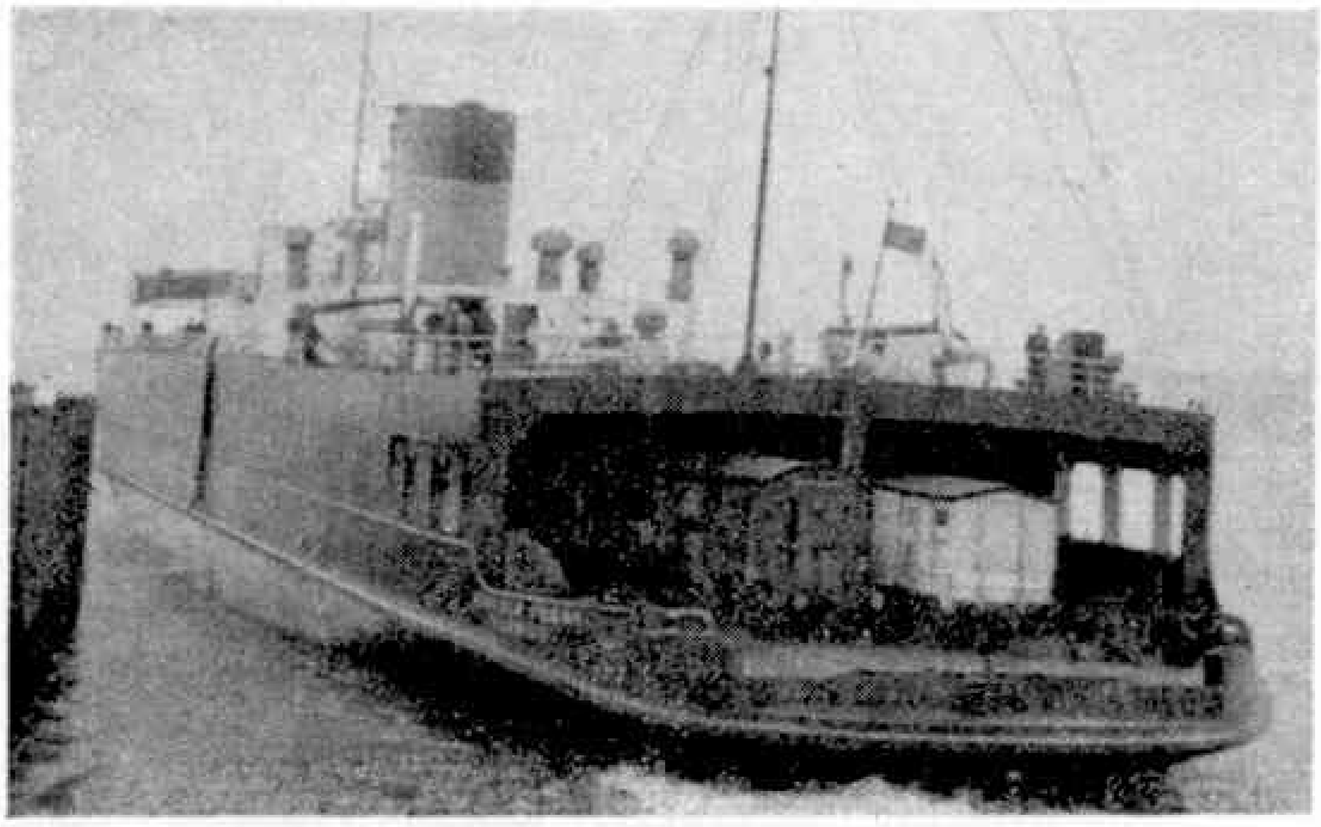
While some of the South Coast to France train ferries are household words, the Harwich-Zeebrugge Train Ferry is by no means so well known.

The fleet consists of three ships, the *Essex Ferry*, the *Norfolk Ferry* and the *Suffolk Ferry*, and the service comes under British Railways (Harwich Section).

There are no fixed times for sailings. These are governed entirely by the amount of traffic, for goods traffic only is carried, although a maximum of twelve passengers can be accommodated on each vessel. Two vessels are in service at a time, and one is held in reserve. In the week from July 2nd last the *Norfolk Ferry* made six trips in and out, involving a crossing of the North Sea twelve times, working alternately with the *Essex Ferry*.

Capacity varies with the type of goods wagon carried. Fifty of British type can be carried but when the larger Continental wagons are loaded, the number is reduced to thirty-four. With no goods wagons, one hundred and thirty-four motor vehicles can be stowed.

These ships are familiar sights at Harwich, and crowds of interested visitors gather to watch the trucks being shunted on to the sidings, whenever one docks. Fruit vans from Italy, fish refrigeration vans from Belgium and line upon line of Volkswagens can then be seen being run ashore from the tracks on the vessel.



The "Norfolk Ferry" about to berth at Harwich. Photograph by D. W. Hall, Dovercourt.

D. W. HALL (Dovercourt).

Fireside Fun

A rabbit and a lion were at a table in a famous restaurant. The rabbit beckoned to the waiter and said: "One head of lettuce, and no salad dressing."

The waiter looked toward the lion, and asked the rabbit "What will your friend have? Isn't he hungry?"

"Look," said the rabbit testily, "if he was hungry, do you think I'd be sitting here?"

* * * *

"Come quickly, doctor, our young son has swallowed a bottle of ink."

"Really? Incredible!"

"No, doctor, indelible."

* * * *

"All right! All right! so I DID say stand on your heads!"

* * * *

"I don't think much of elephants," said the fly to the bluebottle.

"Why?" queried his friend.

"Well, for one thing they haven't learned to walk on ceilings."

* * * *

"Dad, I'm going to be a detective. Can you tell me a good disguise?"

"Aye, wash your face."

* * * *

Recruiting Officer: "When is your birthday?"

Recruit: "What's the difference? You ain't going to give me anything."

* * * *

Boasting of his musical ability, Amos said: "When I was a boy our town was hit by a flood. My father hopped on to a bed and floated to safety."

"But what," asked someone, "has that got to do with your musical ability?"

"Well," explained the other, "I accompanied him on the piano."

* * * *

Sergeant: "Have you cleaned your boots this morning?"

Recruit: "No."

Sergeant: "No what?"

Recruit: "No polish."

* * * *

Mother: "What did mama's little boy learn in school today?"

Johnny: "I learned two kids not to call me 'Mama's little boy'."

"Now which of you," asked the teacher of her natural history class, "can tell me what an oyster is?" A small hand was raised.

"Yes, Richard," said the teacher.

"An oyster," defined Richard proudly, "is a fish built like a nut."

* * * *

A visiting Texan was telling his Minnesota host about the big fish he had caught in his home State.

"As a matter of fact," said the Texan, "I caught an eight-inch one just last week."

Unimpressed, the Minnesotan said that a fish that size was small in his State.

"Maybe so," said Tex, "but in Texas we measure a fish between the eyes."

* * * *

Golfer (who has lost his ball and is annoyed with his caddie): "Why didn't you watch where it went?"

Caddie: "Cause it don't usually go nowhere and it sorta took me unprepared like."

* * * *

BRAIN TEASERS

TRY THIS

Can you split 40 into two parts so that the smaller part plus half the greater equals $\frac{1}{8}$th of the greater plus twice the smaller?

(S.W.C.)

* * * *

WHAT IS THE PHRASE?

The letters below represent a well known phrase of three words, except that 2 each of three different kinds of letters have been left out. The remaining letters are set down in their correct order, but have been closed up so that the spaces for the missing letters cannot be seen. Can you puzzle it out and discover what the phrase is?

E S W E E T E

* * * *

HOW MANY PETS?

A boy has a number of pets. They are all zebras except two, all monkeys except two and all parrots except two. How many pets has the boy got?

(M.G.)

* * * *

ANSWERS TO LAST MONTH'S PUZZLES

Five Minute Crossword

The solution to the simple crossword is given below:

* * * *

A Wordy Problem

The two-syllable word indicated by the clues given is "Spendthrift."

* * * *

Jumbled Clues

The six complete words indicated by the twelve clues are as follows: Gasbag, Airmail, Skylark, Footstep, Postbox, Inkstand.

■	A	■	B	■
A	F	T	E	R
S	T	E	E	L
P	E	A	T	Y
■	R	■	S	■

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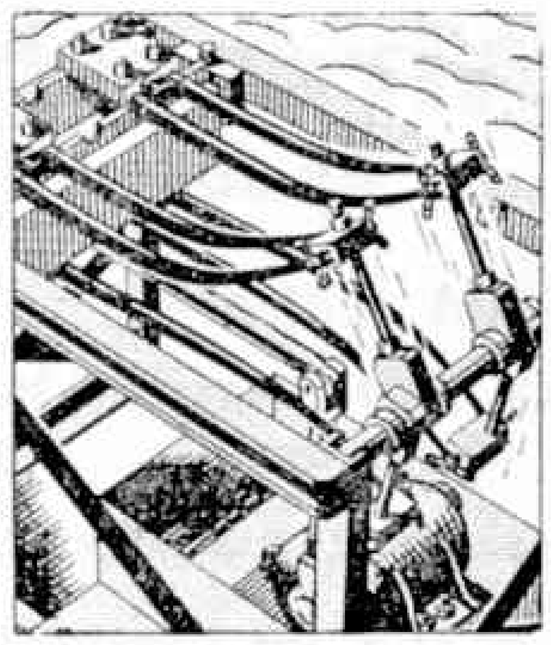

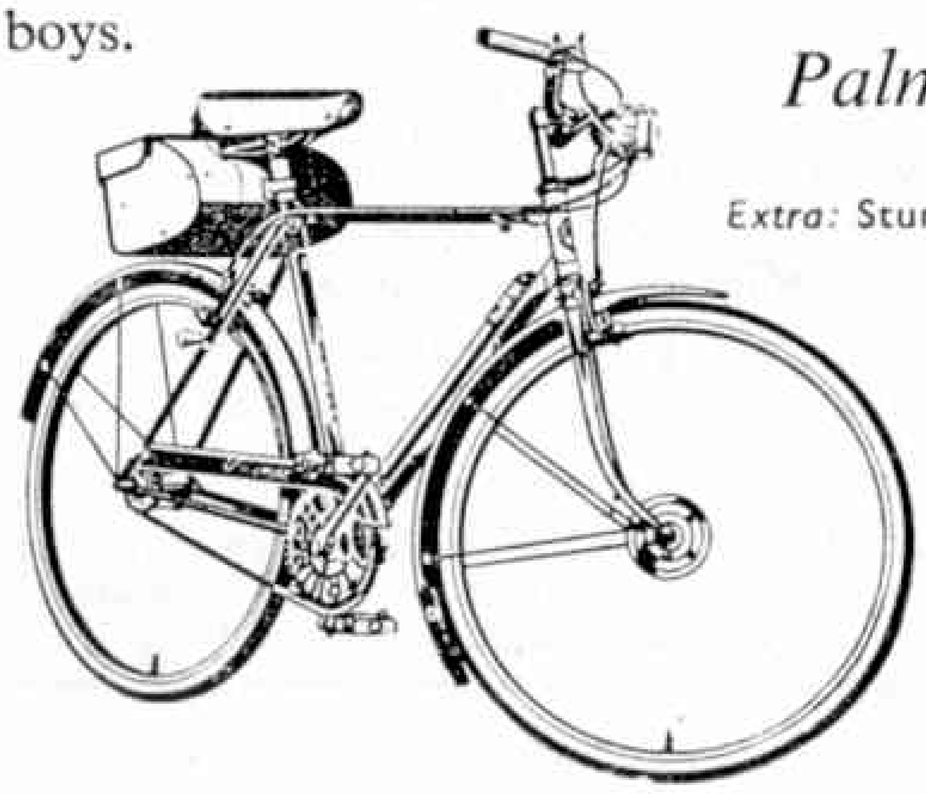

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1 *Why are policemen popularly called "bobbies" and "peelers"?*

(a) because of their helmets, (b) after John Peel, the huntsman, (c) after their founder's name?

2 *What is a "stern-wheeler"?*

(a) an early form of bicycle, (b) a three-wheeled car, (c) a type of paddle-steamer?

3 *Can rubber tyres conduct electricity?*

4 *Who was the first monarch to fly to claim a throne?*

(a) Queen Elizabeth II,
(b) Queen Juliana,
(c) King Paul of the Hellenes?

5 *Can cycle tyre pressures be accurately checked?*

The **DUNLOP** *cadet knows all the answers*

1 (c) Sir Robert Peel. **2** (c) It has a large paddle-wheel at the stern. **3** Yes, Dunlop have discovered how to do this without affecting the other properties of rubber. **4** (a) Queen Elizabeth II in 1952. **5** Yes—fit Dunlop "Easipump" Valve Inserts to your roadster cycle tyres and use a Dunlop Cycle Tyre Pressure Gauge to check them regularly.

SCORING : 10 marks for every correct answer. 50—top of the class. 30-40—good. Below 30—Smarten up there!

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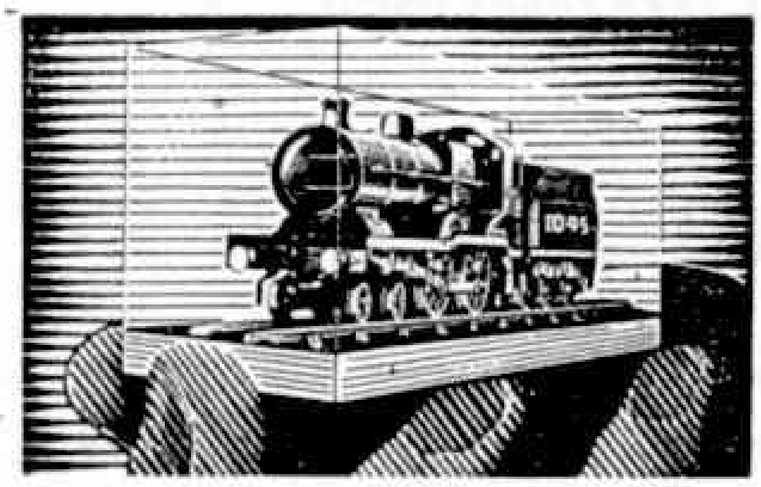

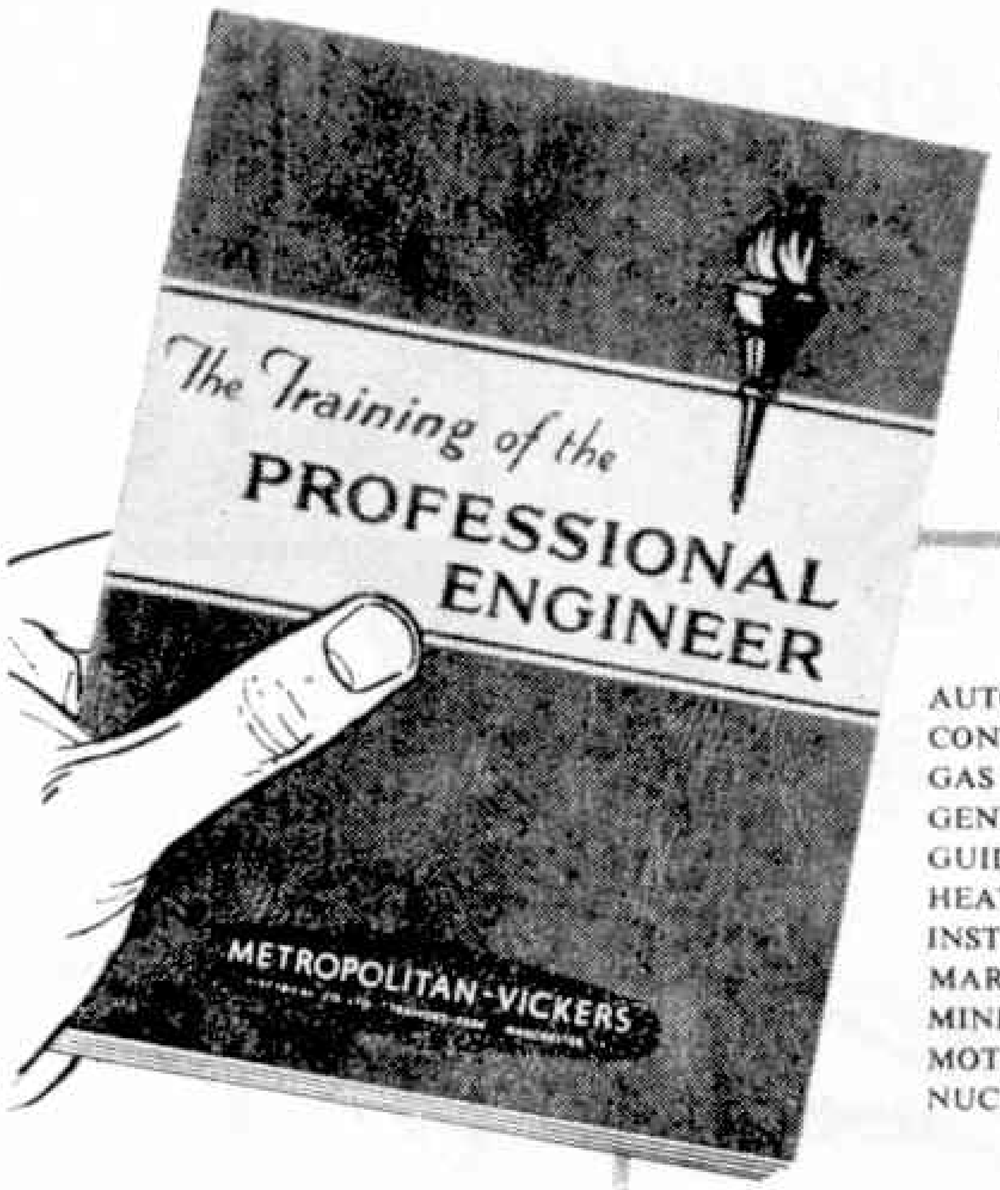

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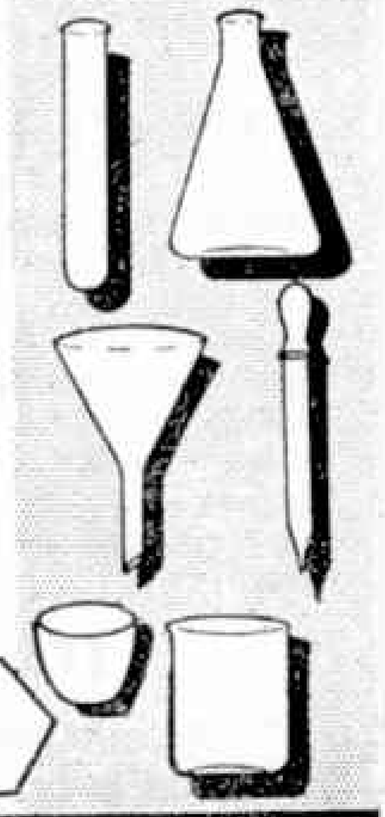

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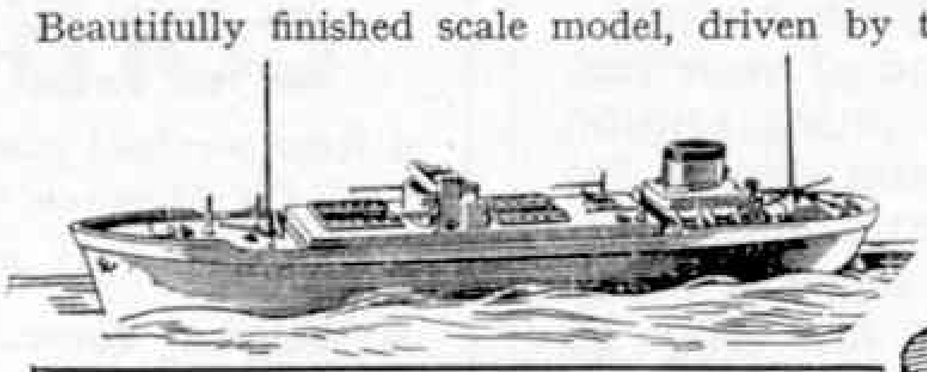

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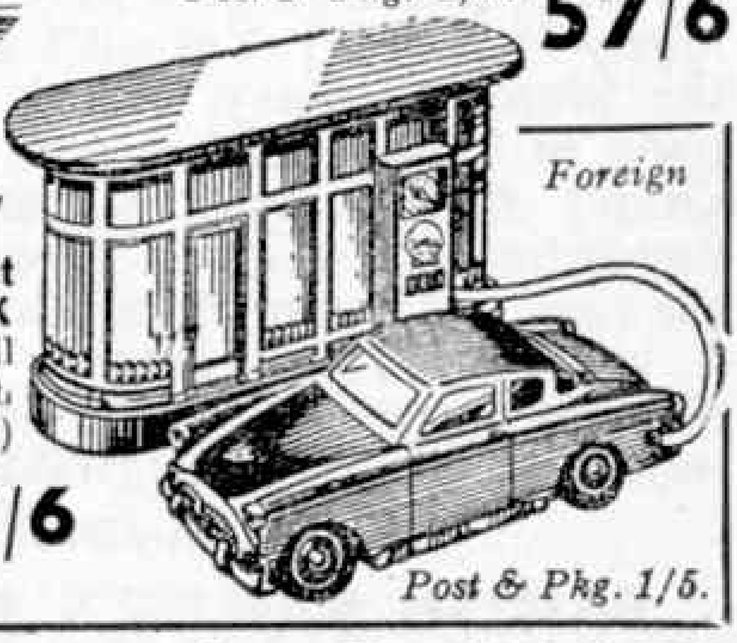

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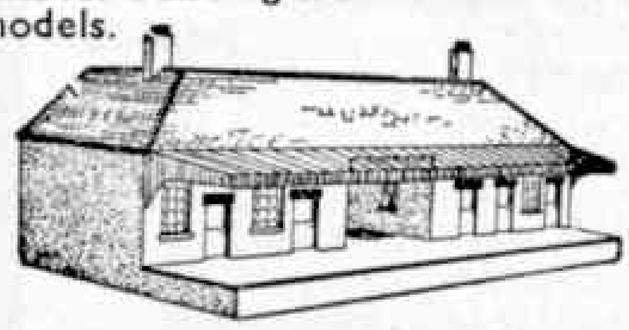

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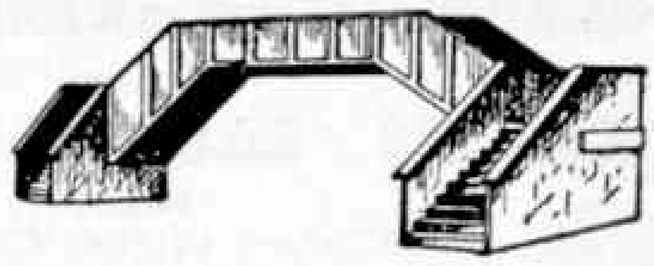

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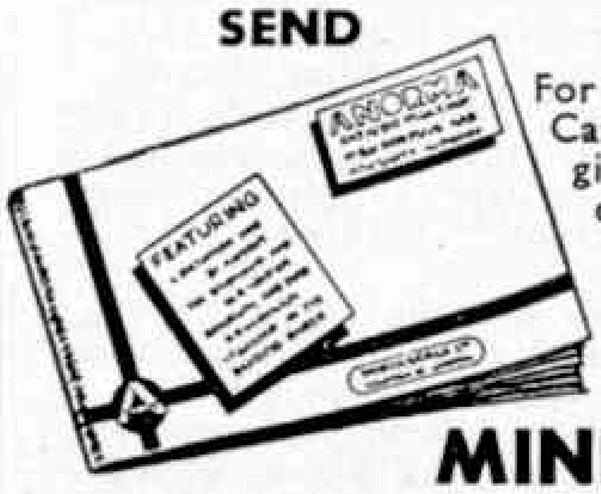

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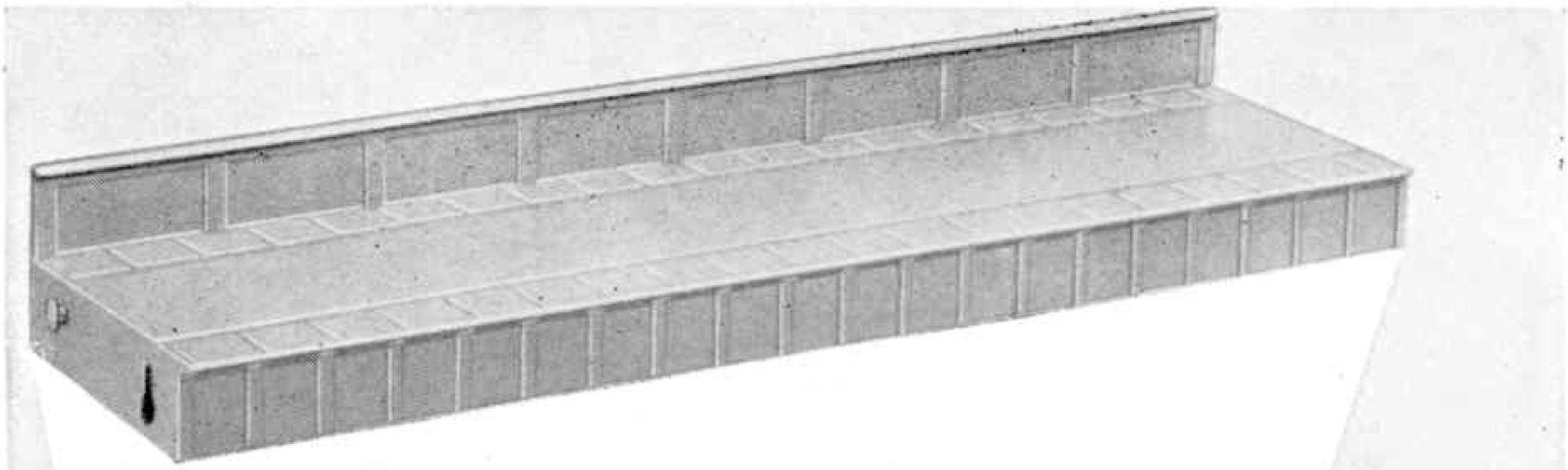

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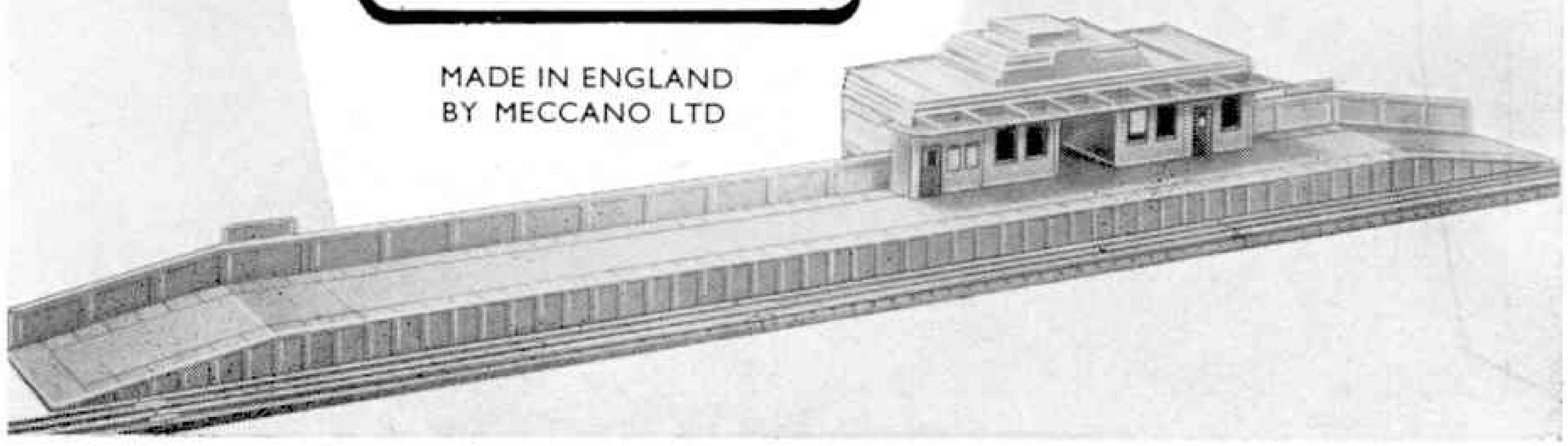

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Motor Chassis and Steering Mechanism

The chassis consists of two 12½" Angle Girders bolted to the sides of a 5½" x 2½" Flanged Plate 1 (Fig. 3) and connected at their front ends by a 2½" x ½" Double Angle Strip 2. The rear axle is a 6½" Rod supported in a 2½" x 1" Double Angle Strip 3 bolted across the Flanged Plate 1. The Conical Discs of the rear wheels are held in place by 1½" Pulleys.

The steering mechanism is shown removed from the chassis in Fig. 2. Each of the front wheel axles is fixed in the lower cross bore of a Coupling 4 mounted on a 1½" Rod. These Rods pass freely through the bosses of Cranks 5, and one Rod is held in place by a ½" Pinion and the other by a Coupling. One of the front wheel axles is a 3½" Rod 6 and the other is a 1½" Rod. The front wheels are mounted freely on the Rods and are held in place by Collars.

A ¾" Bolt 7 is screwed tightly into each of the Couplings 4, and Collars are fastened against the heads of the Bolts. A Rod and Strip Connector is pivotally mounted on a bolt fixed by a nut in each of the Collars. The Rod and Strip Connectors are linked together by a 3½" Rod. The Cranks 5 are bolted tightly to the chassis.

Two Flat Trunnions 8 are fixed to the chassis, and one of them supports a 2½" Strip 9. A 1" x 1" Angle Bracket 10 is bolted to the Strip 9, and is connected to it also by a Fishplate 11. A 3½" Rod is mounted in the Flat Trunnions 8 and carries two Collars, a Coupling 12 mounted freely, a 1½" Contrate, a Bush Wheel 13 and a ½" fixed Pulley. The steering column is made from a 2" and a 1" Rod joined by a Coupling, andit carries a ½" Pinion that engages the 1½" Contrate.

A 1½" Strip is bolted tightly to the Bush Wheel 13 and an End Bearing is lock-nutted at its end. A 1" Rod is fixed in the End Bearing and in a Swivel Bearing 14 that pivots on the Rod 6 between a Collar and a Coupling.

The petrol tank at one side of the chassis is a Cylinder that is bolted to a 1" x 1" Angle Bracket but is spaced from it by a ½" loose Pulley on a ⅜" Bolt. A Wheel Disc is fixed to each end of theCylinder by nuts on a Screwed Rod. The tool box at the other side of the chassis is a Channel Bearing fitted with two 1" x 1" Angle Brackets and attached to a Trunnion bolted to the chassis.

Construction of the Cab and Bonnet

The lower part of the back of the cab is a 5½" x 2½" Flanged Plate 15, (Fig. 3), extended upward by a 5½" x 1½" and two 5½" x 2½" Flexible Plates that overlap the Flanged Plate by two holes. The upper ends of the Flexible Plates are curved forward to form part of the roof.

Each side of the cab consists of two 2½" x 2½" Flexible Plates overlapped four holes, and a 2½" x 1½" Triangular Flexible Plate 16, edged by a 5½" Strip 17 and a 3½" Strip. A 3" Strip is bolted to the lower end of the Strip 17 and is connected to the Flexible Plates by a Fishplate. The window frame is formed by two 3" Strips. The upper ends of the Strips 17 are connected to the back of the cab by Angle Brackets.

The top edge of the windscreen frame consists of two 2½" Strips joined at the centre by a 1" Triangular Plate and attached to the side window frames by Angle Brackets. The centre windscreen division is a 1" x 1" Angle Bracket 18. The front of the cab roof is formed by two 1 11/16" radius Curved Plates and a curved 2½" x 1½" Flexible Plate

bolted to the top of the windscreen and to the ends of the Flexible Plates used for the back of the cab.

Each side of the bonnet is a 5½" x 1½" Flexible Plate edged along the top by a 5½" Strip and at the front by a 2½" Strip. The radiator consists of two curved 5½" x 1½" Flexible Plates 19 fitted with a vertical 2½" Strip and three Formed Slotted Strips. The top of the bonnet is filled in by two 1 11/16" radius Curved Plates and two curved 2½" x 1½" Flexible Plates. These are bolted at the front to a 3½" Strip 20, and are connected to this Strip by Fishplates held by Bolts 21. The top of the bonnet is connected to the radiator by a Formed Slotted Strip 22, and is supported at the rear by the Angle Bracket 18.

Each front mudguard consists of a 2½" x 1½" Flexible Plate, a 2½" x 1½" Triangular Flexible Plate and a 3½" x 2" Triangular Flexible Plate, curved as shown. These Plates are edged on the inside by a curved 3½" Strip 23, and are attached to the chassis by a 1" x ½" Angle Bracket 24 and to the side of the bonnet by an Angle Bracket held by Bolt 25.

The headlamps are Chimney Adaptors fixed to Angle Brackets, which are held by nuts on the ends of a Screwed Rod passed through the sides of the bonnet.

The front bumper consists of two 5½" Strips overlapped nine holes and connected by Angle Brackets to 2½" Strips bolted to the front of the chassis.

Assembly of theTrailer

The lower deck of the trailer consists of four built-up angle girders, indicated at 26 and 27 (Fig. 4), each made from two 12½" Angle Girders joined together. These girders are connected at each end by a built-up girder 28, made from two 5½" Angle Girders overlapped seven holes, and at the centre by two 5½" Strips also overlapped seven holes. Two 12½" Strips are bolted between the girders 26 and 27 on each side, and along the centre of the deck are bolted four 5½" x 2½" and two 2½" x 2½" Flexible Plates, which are strengthened at the centre by two 12½" Strips.

Each side of the lower deck is made by bolting two 5½" x 2½" Flexible Plates, a 4½" x 2½" Flexible Plate and a 12½" x 2½" Strip Plate to the flange of the girder 26. The top edges of the Plates are strengthened by two 12½" Strips, and the side is extended downward by a 2½" x 2½" Triangular Flexible Plate, one half of a Hinged Flat Plate 29, a 5½" x 2½" Flexible Plate and a 4½" x 2½" Flexible Plate. The wheel arches are made from 2½" Stepped Curved Strips.

The top deck is supported on each side by a Flanged Sector Plate at the front, and by built-up strips 30, 31 and 32. The strip 30 consists of a 5½" Strip and a 2½" x ½" Double Angle Strip overlapped two holes; strip 31 is made from a 4½" x ½" Double Angle Strip and a 2½" Strip bolted together , and strip 32 is formed from two 4½" Strips overlapped three holes. The strips 30, 31 and 32, and the Flanged Sector Plate, are connected by a built-up strip 33, made from a 12½", two 5½" and two 2½" Strips.

The side rails of the top deck are each formed by a 12½", a 2½", a 2" and two 5½" Strips arranged as shown. The side rail is connected to the strip 33 by a 1½" Strip at each end, and by a 2½" x 2½" Flexible Plate at the centre.

The floor of the top deck on each side consists of two 12½" x 2½" Strip Plates placed one on each side of a 2½" x 2½" Flexible Plate 34. These Plates are connected to the side rails by Angle Brackets. The Plates on each side are connected at the rear by a 5½" and a 4½" Strip overlapped five holes, and at the front by a 4½" Strip 35 extended at each side by a Corner Gusset. The Plates at the sides of the top deck are joined by three 3½" x ½" Double Angle Strips 36 and a 3½" Strip 37.

Two 5½" x 1½" Flexible Plates 38 are bolted to a 2½" x 2½" Flexible Plate at each side, and this assembly is fixed to the girder 28 at the front and to the flanges of the Flanged Sector Plates. At the rear two 2½" x 1½" Flanged Plates 39, connected by a 5½" x 1½" Flexible Plate, are bolted between the sides of the lower deck.

The hinged ramp is made by bolting four 3½" x 2½" Flanged Plates together in pairs, and the two pairs are connected by a 5½" Strip 40 placed between the inner flanges of the Plates so that it overlaps each pair by three holes. Two 4½" x 2½" Flexible Plates and a 3½" x 2½" Flangod Plate 41 are fixed together as shown and are bolted between the pairs of Flanged Plates. A Fishplate is fixed to each side of the lower end of the ramp by its round hole, and the slotted holes of the Fishplates are passed over Threaded Pins attached to the strips 32. A ⅜" Bolt is held by a nut at each side of the upper end of the ramp. These Bolts can be engaged behind Fishplates 42 to keep the ramp in its travelling position.

The trailer wheels are fixed as shown in Fig. 4 on 6½" Rods mounted in two 5½" x ½" Double Angle Strips, which are connected at one end by a 3½" x ½" Double Angle Strip. The trailer bogie pivots on a 4½" Rod supported in 2½" x ½" Double Angle Strips 43. These are bolted to the girders 27 and are strengthened by Flat Trunnions.

A Face Plate 44 is attached to Semi-Circular Plates bolted to the girders 27. The boss of the Face Plate is fitted over a 1½" Rod held in a second Face Plate that is fixed to the Flanged Plate 1 of the motor unit. The two Face Plates are separated by a Spring Clip on the Rod.

Parts Required

14	of No.	1	4	of No.	20b	10	of No.	59	1	of No.	185
21	" "	2	2	" "	21	2	" "	62	4	" "	187
6	" "	2a	1	" "	23	6	" "	63	4	" "	187a
6	" "	3	1	" "	23a	1	" "	77	7	" "	188
6	" "	4	1	" "	24	1	" "	80a	8	" "	189
18	" "	5	2	" "	24a	1	" "	80c	10	" "	190
2	" "	6	2	" "	26	4	" "	90	6	" "	191
5	" "	6a	1	" "	28	8	" "	90a	12	" "	192
10	" "	8	1	" "	35	2	" "	108	6	" "	197
4	" "	9	280	" "	37a	2	" "	109	1	" "	198
14	" "	10	259	" "	37b	3	" "	111	4	" "	200
24	" "	12	32	" "	38	6	" "	111a	2	" "	212
5	" "	12a	2	" "	38d	6	" "	111c	2	" "	214
2	" "	12b	1	" "	46	2	" "	115	4	" "	215
3	" "	14	7	" "	48a	1	" "	126	1	" "	216
1	" "	15a	4	" "	48b	4	" "	126a	4	" "	221
3	" "	16	2	" "	48c	4	" "	142a	2	" "	222
1	" "	17	2	" "	48d	1	" "	147b	2	" "	223
4	" "	18a	2	" "	51	1	" "	160	2	" "	224
2	" "	18b	2	" "	52	2	" "	164	2	" "	225
4	" "	20	5	" "	53	2	" "	165			
4	" "	20a	2	" "	54	1	" "	166			